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JULY, 1907.

$2.00 per year.
$3.00 with Directory.

TEXTILE WORLD RECORD

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LORD & NAGLE COMPANY · Boston & Philadelphia

COPYRIGHT, 1907, LORD & NAGLE COMPANY, REG. U. S. PAT. OFF.

The Textile-Finishing Machinery Co.

HOWARD BUILDING

STAIRWAYS, 83 EXCHANGE PLACE [ENTRANCES] ELEVATOR, 171 WESTMINSTER ST.

PROVIDENCE, R. I.

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

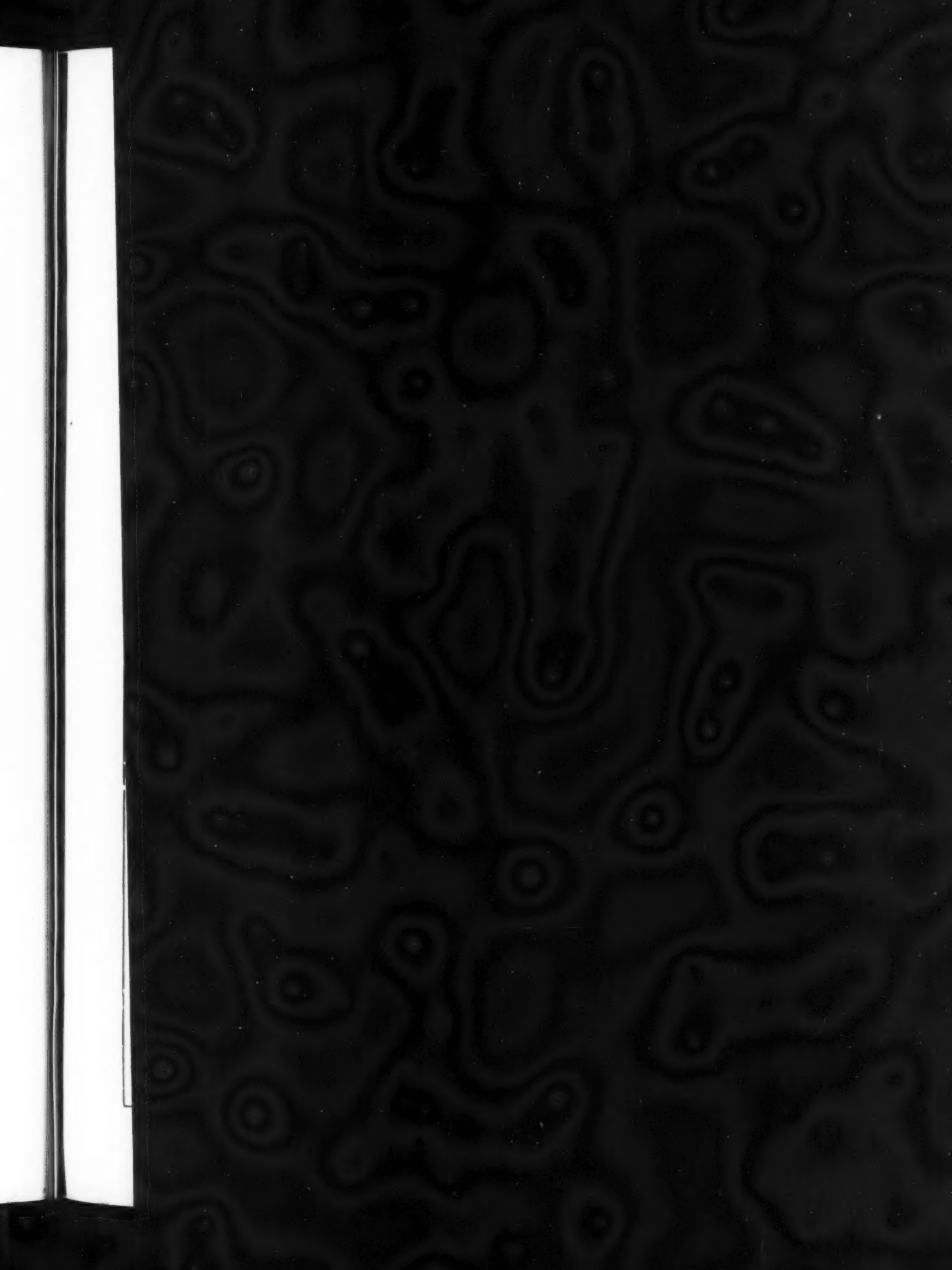
Hydraulic Presses and Pumps.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

Southern Agent, STUART W. CRAMER, Charlotte, N. C., Equitable Building, Atlanta, Ga.



Calender and Mangle Rolls

COTTON

PAPER (LINEN, COTTON OR MANILLA)

FELT PAPER

COMBINATION (COTTON AND HUSK)

COMBINATION (COTTON AND EXCELSIOR)
PATENTED

HUSK

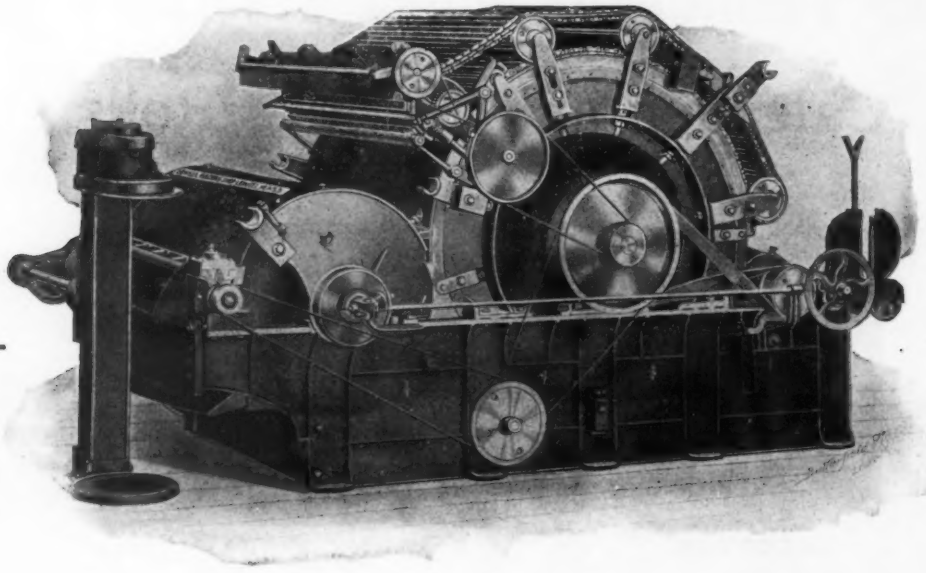
FIBRE

BRASS CHILLED IRON RUBBER

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

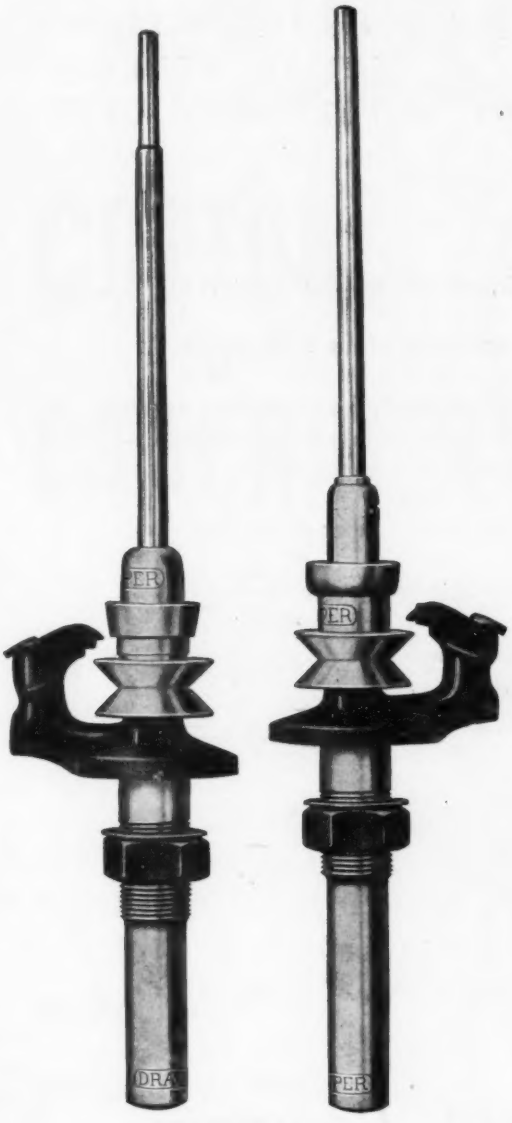
Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.



Two New
Large Size
Spinning Spindles.

We make

Draper,
Whitin,
McMullan

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
Spoolers,
Reels,

Banding Machines,

etc., etc.

Draper Company,
HOPEDALE,
MASS.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

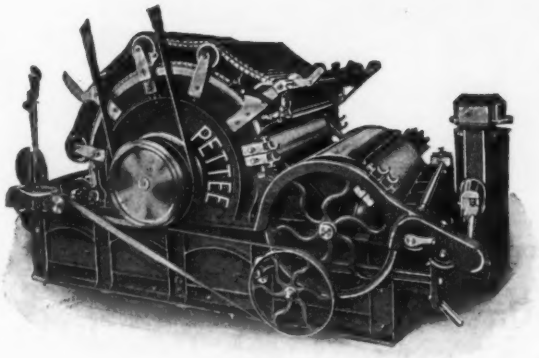
The Stafford Company

Readville, Mass.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

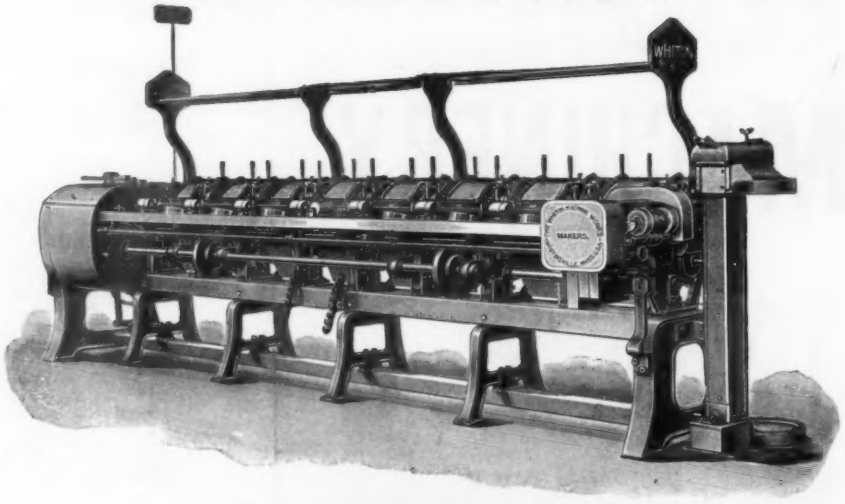
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples and Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

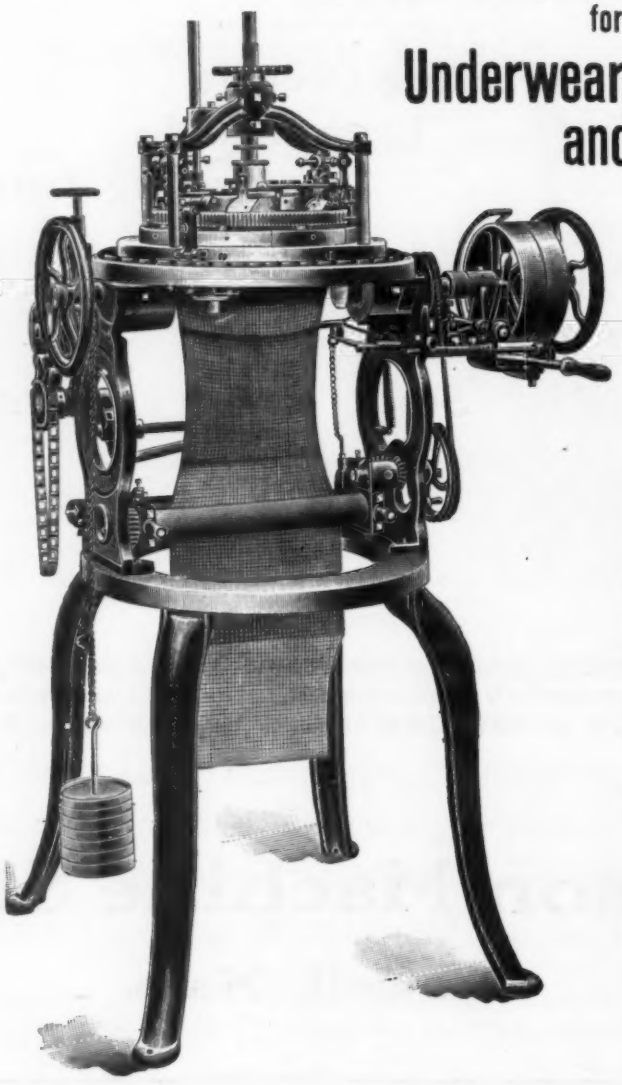
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

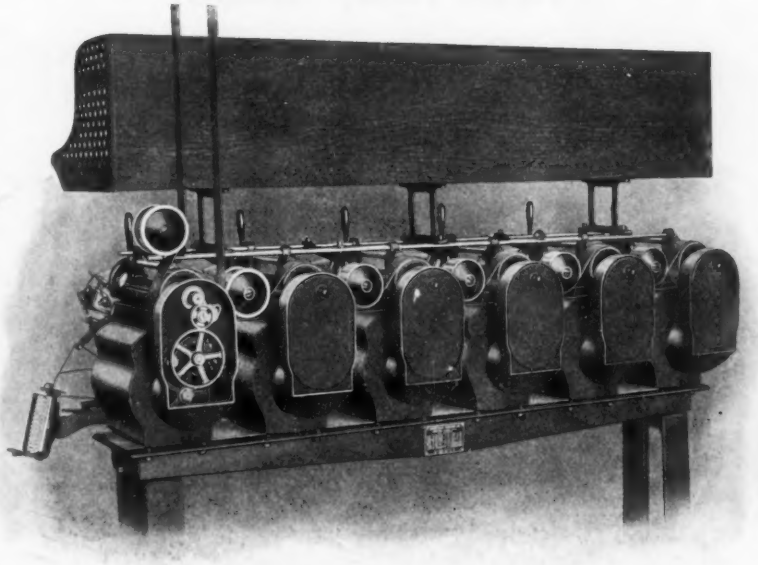
for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

Knitters ask for the Nutaper Cone



Our recent "fixed-gain" device has added greatly to the efficiency of the No. 50 machine, simplifying its operation and insuring the production of cones having unvarying and correct spacing for delivery to knitting machines.

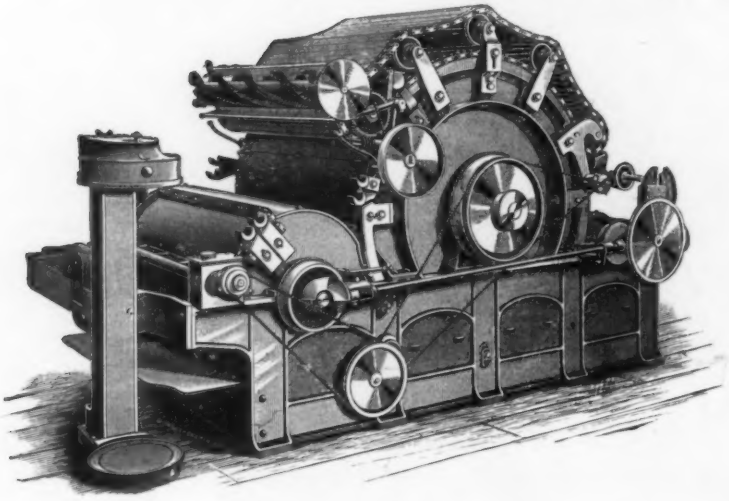
Universal Winding Company
BOSTON

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

INCLUDING

Plain and Fancy Silk Looms

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S,
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

Jacob K. Altemus is

Able to supply the best

Cop Winding Machinery

Or Hosiery Winders and more in particular

Bobbin Winders,

Keep in mind that I

The Greatest Bobbin Winder for Skeins Ever Built.

Always produce machines that are right

Letting nothing go out

That is not satisfactory before delivery.

Every

Manufacturer should investigate warping and beaming machinery, warp splitting as well,

Upright Spoolers, Quillers, Warpers, Twisters, etc.

Send for full information and prices.

Textile Machinery

2824 N. 4th St., Philadelphia, Pa,

Shuttles for all Textile purposes and Sundry Special Loom devices

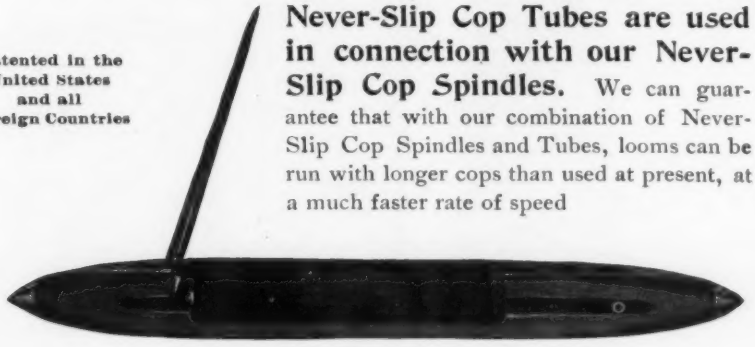
Never=Slip Cop Spindles and Tubes

Never-Slip Cop Tube

Patent applied for

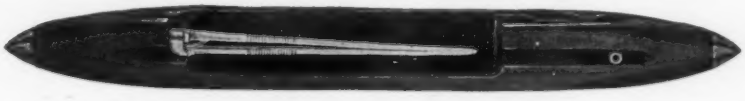
Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered.

U. S. Patents: 778851, Jan. 3, 1905; 79611, May 23, 1905; other patents pending

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American Textile Specialty Machinery Co.

363-373 Rider Avenue, New York City

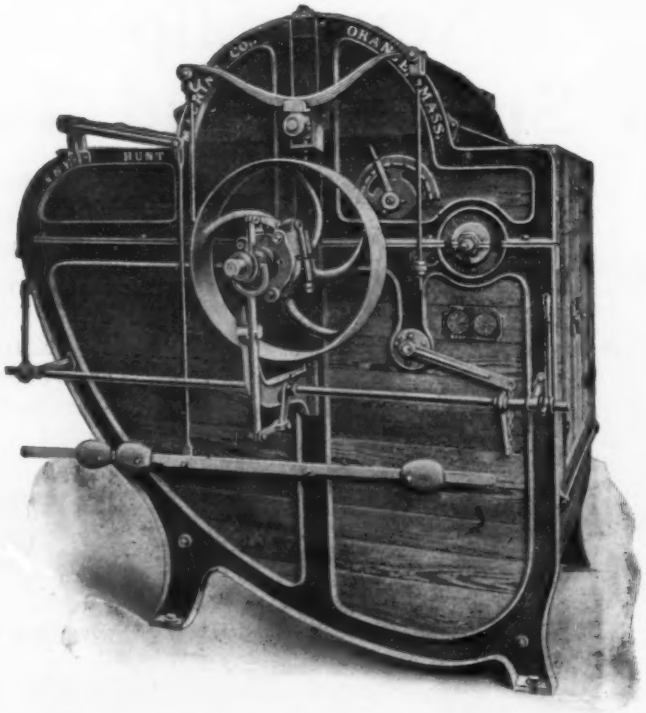
NEAR MOTT AVENUE SUBWAY STATION

Electric and Automatic

Warp Stop Motion for Silk, Wool and Cotton

Simplicity! ***Perfection!***

Rodney Hunt
MACHINE CO.
ORANGE MASS.



RODNEY HUNT-TYPE SH-FULLING MILL

Less cost to operate—by—more efficient design
Less first cost—by—more modern production
Less repairs—by—superior construction
Special Circular No. 301 tells why it has MORE CAPACITY and gives BETTER RESULTS
SOLD ON TRIAL
It will pay to investigate our

TEXTILE WET FINISHING MACHINERY

RODNEY HUNT MACHINE CO.

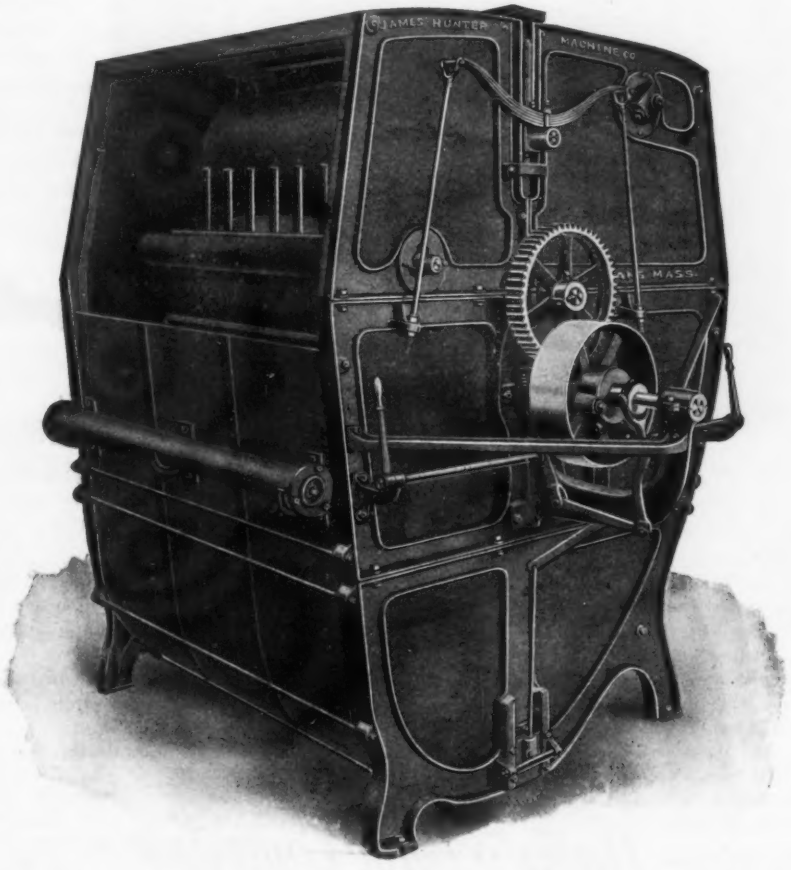
Branch Office: 70 Kilby St., Boston. - Main Office and Works: Orange, Mass.

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Cloth Washers. *Bulletin 51*

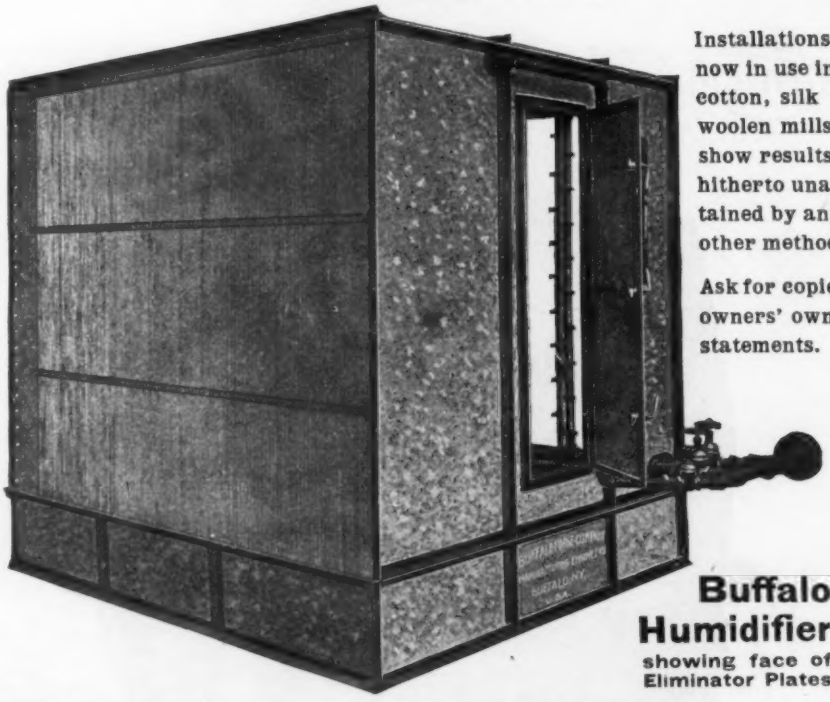
The Hunter CLOTH WASHER



Various Types and Sizes Fully Described in Bulletin 51. Ask for it.

BUFFALO
HUMIDIFING AND COOLING SYSTEM

For all Textile Mills



Installations now in use in cotton, silk and woolen mills show results hitherto unattained by any other methods.

Ask for copies of owners' own statements.

Buffalo Humidifier
showing face of Eliminator Plates

Features: Humidifies and cools the air before, *not after*, entering the room.

No dependence on uncertain and insufficient air leakage in and out of mills for cooling effect.

Humidified and cooled air delivered to work rooms under slight pressure, in order to avoid drafts. Inward leakage of hot air in summer and of cold dry air in winter prevented—an essential feature for uniform humidity and temperature conditions.

The one system cools the spinning room to within 5° of ontside temperature in summer, insures uniformly heated and regulated temperature in winter, maintains and controls humidity of all parts of building at any degree desired, both winter and summer.

Cooling of rooms without opening windows in summer eliminates window drafts—disastrous to fine yarns.

Automatic control. Simple. Nothing to get out of order.

Send for complete illustrated catalog

Buffalo Forge Company
Buffalo, N.Y.

We can interest you.

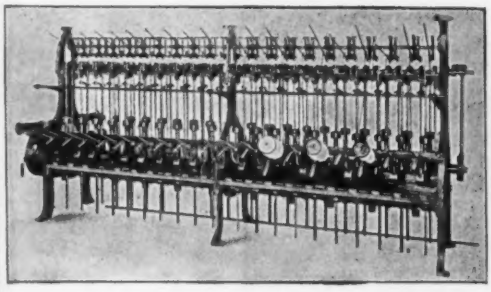
The Canadian Buffalo Forge Co., Limited, Montreal, Canada.

OSWALD LEVER CO.

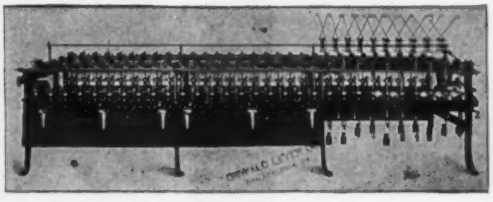
(Formerly LEVER & GRUNDY.)

MANUFACTURERS OF TEXTILE MACHINERY AND SOLE MAKERS OF OUR PATENTED SPECIALTIES IN THE UNITED STATES.

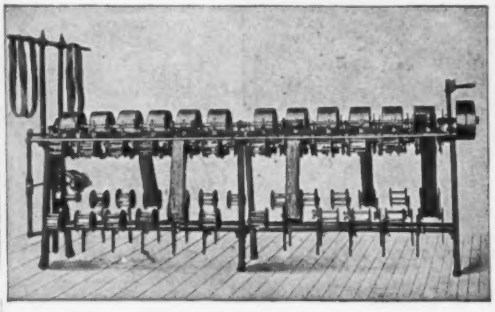
Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mills, Beaming Machines, etc.



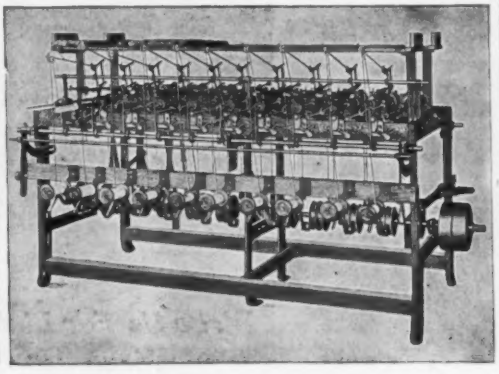
Vertical Spindle Gear Driven Winder, as used by all manufacturers of heavy duck, jute, cotton bagging and carpets.



Silk Winder to wind on Quills, Paper Tubes or Butts. The finest of cotton or silk.



Pressure Drum Spooling Machine. This machine is adapted for spooling any kind of yarn, whether from mule cops or skeins.

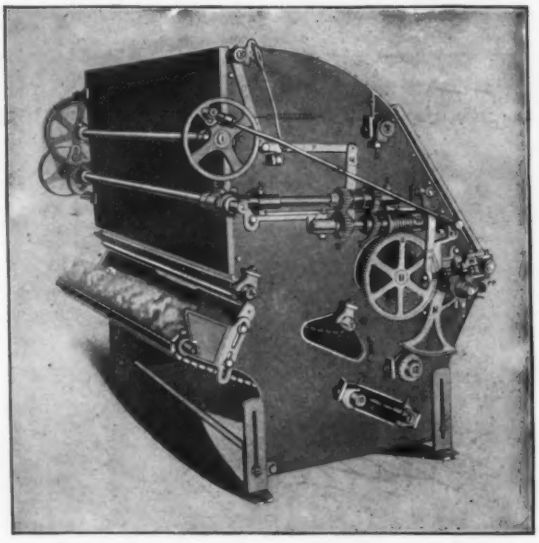


This Machine may be arranged to wind from skeins, spools, cones, or any kind of spinning bobbins. Most suitable machine for cotton or woolen blankets.

Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machines for Silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA., U. S. A.

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

Woonsocket Machine and Press Company

WOONSOCKET, R. I.

HARWOOD'S MACHINERY

Increases Production, Improves Quality, Decreases Labor Cost.

THE BRAMWELL SELF-WEIGHING FEEDER,

For Woolen, Worsted, Hosiery and Shoddy Cards and Garnett Machines.

We began introducing this feeder more than twenty years ago and its use is now practically universal. Many other types and makes have been tried and discarded, but the Bramwell, in its improved and up to date form, is now recognized everywhere as the most perfect feeder and only complete feeding machine in the world.

Our long experience has proved conclusively that where evenness is required—determined by weighing—our weighing feature is absolutely indispensable. Several attempts have been made to introduce feeding machines ignoring this principle, but none have succeeded.

We have made a careful study of all phases of the feeding problem and by adaptations and modifications of the Bramwell Feeder to meet the particular conditions, are prepared to feed evenly all kinds of stock from rabbit's fur to jute tow, including shoddy, cotton, fine wool, mixtures, fine and coarse worsted, flax tow, long worsted and all other kinds of stock.

THE APPERLY FEEDER,

For Second Breaker and Finisher Cards.

This machine was originally brought to this country and introduced against great opposition by the founder of this concern, the late Geo. S. Harwood. Today there are about 15,000 machines of our construction running in this country and Canada. We have greatly improved the machine. It is today an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the KEMP POSITIVE GEARED TRAVELER and the STANDARD TRAVELER with all other recent improvements.

THE BRAMWELL PICKER FEED,

For Burr Pickers, Mixing Pickers, Fearnaughts and Lumpers.

We consider our improvements in picker rooms of the utmost importance for up-to-date manufacturers. In fact, wide awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest Bramwell Picker Feed is built to handle all kinds of stock in any quantity with evenness and without injury to the staple.

THE SPENCER AUTOMATIC STOCK OILING MACHINE.

This is a modern device for oiling the stock automatically on its way to the picker from the BRAMWELL PICKER FEED, superseding the wasteful, dirty method heretofore in use. Because of the accuracy of this method and the fact that the oil goes on the stock only (instead of the floor and walls) there is a large saving of oil, and the stock is at the same time more evenly oiled and much better prepared for the carding process.

THE MODERN BRAMWELL FEED FOR WOOL WASHERS AND WOOL DRYERS.

The scouring and drying of stock is today recognized as a very important part of the manufacture of textiles, especially in worsted mills. Our feeds are recognized as the standard for properly feeding stock in the grease or wet stock with absolutely no injury to the staple, with evenness and in sufficient quantity and in the best possible condition for economical scouring. There have been other feeds offered for this class of work, but after clogging up and giving all kinds of trouble most of them are today in the scrap heap, having been replaced with our feeders.

REPAIRS AND IMPROVEMENTS FOR OLD FEEDERS.

We have not been standing still all these years and the feeders we are building today are modern and up-to-date but these improvements and attachments can be placed on older feeders of our construction, greatly to their benefit. We do not hesitate to claim that **no outlay will show a greater return** to a manufacturer than money spent in bringing your Bramwell and Apperly Feeds thoroughly up-to-date.

APRONS OF ALL KINDS FOR BRAMWELL FEEDERS.

We build about thirty different styles of spike aprons adapted to the various kinds of stock BRAMWELL FEEDERS are called upon to handle. Our policy is and will be to put into our aprons the best materials and workmanship money can buy. We know we could make cheaper aprons by using cheaper materials and less expensive labor and it would take manufacturers some years to find us out. The apron would LOOK nearly as well but would WEAR only two or three years, instead of from five to ten or twelve. Do not trust the man who says he can sell you aprons cheaper than we can. He can do it (and so could we) but you pay the bill in the end. The best is none too good and is the cheapest in the long run.

Call on us for particulars and information about all matters relating to Feeding Machinery.

GEO. S. HARWOOD & SON,

53 STATE ST., BOSTON, MASS.

It's the Comb.

The Reason Why

The Schaellibaum Patent Grid

cleans better and saves more cotton than any other, is because an *Improved Principle* is employed. It is

The only Grid with a Comb

which opens out the cotton and so gives *Greater Efficiency.*

Write us in either English, French, German, Italian or Spanish.

The Rob. Schaellibaum Co., 288 Dyer Street,

Providence, R. I.

Manchester, England **Mulhausen, Germany** **Bombay, India**

PRACTICAL FIRE PROTECTION

If you want your mill buildings properly protected against the fire hazard, thereby obtaining the lowest insurance rates, you must have a supply of water which is instantly available under high pressure and absolutely independent of the successful or immediate operation of pumps or other machinery. The old method of storing such a supply was by wood tanks, generally built on top of buildings. As these tanks are short lived they soon become, themselves, a menace to the building instead of a protector. The sudden bursting of such a tank has often done as much damage as a fire. The up-to-date method of storing water is by means of a steel tank on a steel tower. We make a specialty of the design, manufacture and erection of these tanks of any desired capacity, in any part of the country, to meet any local conditions. Our tanks are recommended by the Factory Mutual Insurance Companies and endorsed by all of our past customers. We have built about seven hundred towers and tanks in all parts of the country, about 50 of which have been erected for Textile Mills. Every one of these is giving satisfaction. Write for booklet No. 7 which gives a list of all our customers with whom we invite you to correspond. The cut shows a tank which we built for the Belton Cotton Mills, at Belton, S. C. The large tank is kept full at all times for fire protection; the small one supplies water for use in the buildings.

Chicago Bridge and Iron Works

105th and Troop Sts. Chicago, Ill.

Prompt Delivery Guaranteed

John Hetherington and Sons, Ltd., MANCHESTER ENGLAND

SOLE MANUFACTURERS OF THE

NASMITH PATENT SIX HEAD COMBER

"One machine instead of two"

Have again increased the size of their Comber Plant, and with this new and extensive addition they are now prepared to make

Deliveries in Ten to Twelve Weeks

Over

1200 Twelve Hundred 1200

NASMITH COMBERS

SOLD

To the Largest and Finest Mills in the United States and Europe.

Over 450 Sold in the United States

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Set of 6 Combers, 10½ in. Lap
of 6 heads each.

4500 to 5200 lbs. per week of 53 hours. The floor space required for set of 6 Nasmith Combers, 1 Ribbon and 1 Sliver Lap Machine is 662 square feet.

Set of 6 Combers, 12½ in. Lap
of 6 heads each

5200 to 6100 lbs. per week of 53 hours. The floor space required for set of 6 Nasmith Combers, 1 Ribbon and 1 Sliver Lap Machine is 677 square feet.

Superior Quality — Combs any length of staple — Less Waste

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186 Devonshire Street
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AGENT FOR

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MAKERS OF TEXTILE MACHINERY

Send for Catalogues. Full Line of Parts Constantly in Stock.

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TRADE MARK

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is at all times a pressing one, but never so acute as during the summer months, and never felt as severely as in your drawing-in room. That is, unless you own a

Barber Warp Tying Machine

Those mills who ordered early are now reaping a decided benefit. They are not worrying whether their drawing-in force is going to stay out during the Summer or not. The Barber Warp Tying Machine takes care of all their work, and with far better results than under the old method.

Their looms are never idle because of a lack of warps.

The output of their weave rooms is not restricted by delays incident to poorly drawn warps, nor are their weavers hampered by the same cause. Besides these advantages, they have been able to reinforce other departments with their former drawing-in help.

Don't these facts appeal to you? Why not think them over?

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77-79 NORTH WASHINGTON STREET (Corner Thacher)
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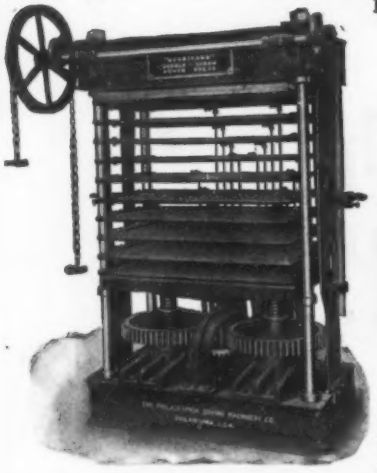
"HURRICANE" DRYERS AND FANS

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.

BELT DRIVEN AND MOTOR DRIVEN



Power Screw, Hydraulic and Lever **Presses**

Truck Yarn Dryer.

"Hurricane" Fan, Style No. 2. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

And they did pull; pulled for dear life, trying to break an ordinary jack straw; but they failed;—failed utterly—ended by trying to twist it apart, and—naturally—failed again.

The experiment shows that a jack straw used as a pin between the intermeshing coils of steel wire which are the product of the

JACKSON BELT LACER

cannot be broken by the utmost endeavor of two strong men. How much greater would be the strength of the rawhide or steel pins actually used, can only be surmised; for in testing, the belt itself breaks first; and when you consider that a 5" belt can be laced in less than 3 minutes at a cost, for material, of one cent, you can readily understand how valuable a machine it is, to have around your shop.

The price is right. Send for catalog.

Birdsboro Steel Foundry & Machine Co., BIRDSBORO, PA.

Fairbairn Lawson Combe Barbour, Ltd.

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Hope Foundry. **Leeds, England**

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery

for the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

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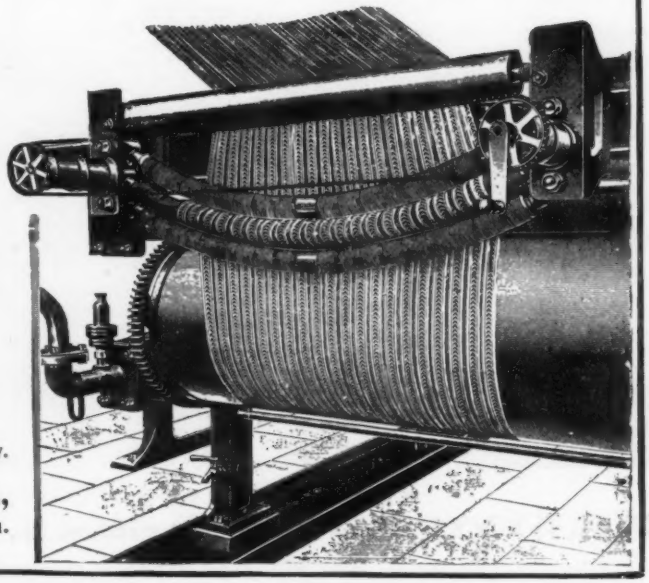
Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

Perfectly Even Tension Both Ways

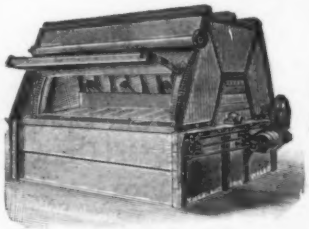
THIS ideal cloth expander gets the full width of the goods in a most satisfactory way. Can be attached to calenders or cans. Hundreds in use in Great Britain and on the Continent—hundreds more in the United States, with constant satisfaction.

Manufacturers unsolicited say to us, "You have the greatest thing in a spreader ever brought to our attention."



We put them in on trial.
Test it on your own work—'t will pay.

Thomas Leyland & Co.,
60 India St., - - - Boston.



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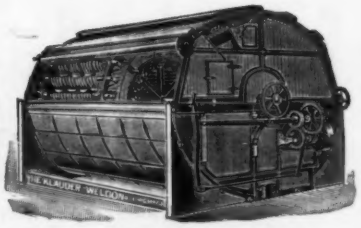
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK



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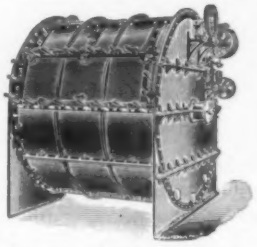
THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



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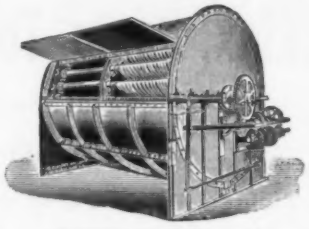
Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



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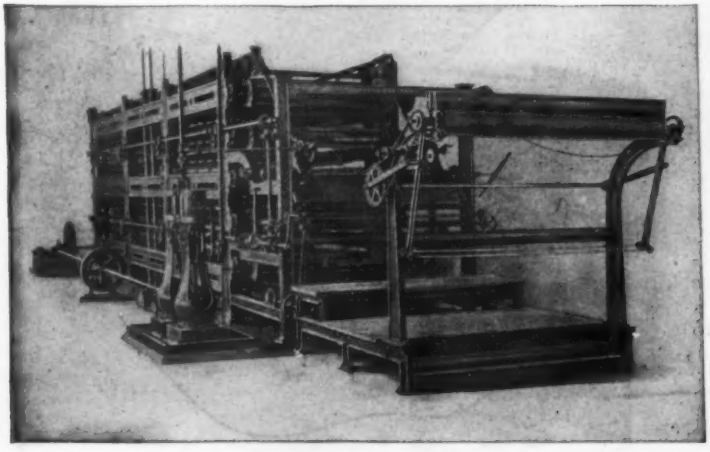
TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. PATENTED FEBRUARY 26, 1895.



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

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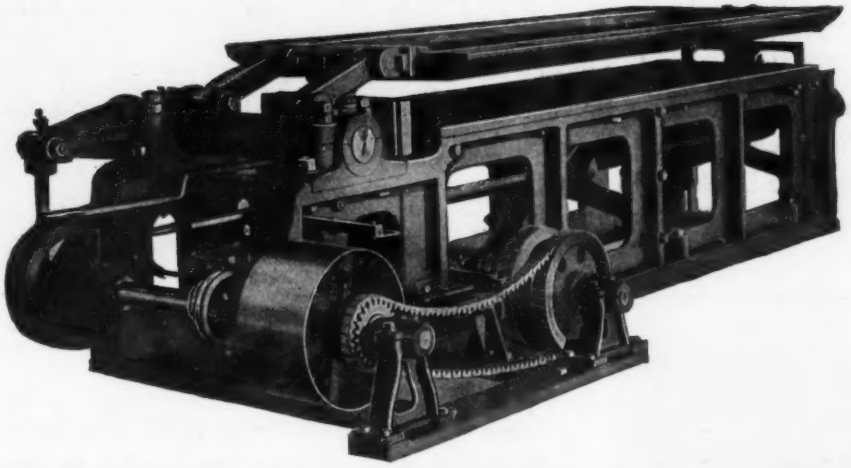

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Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

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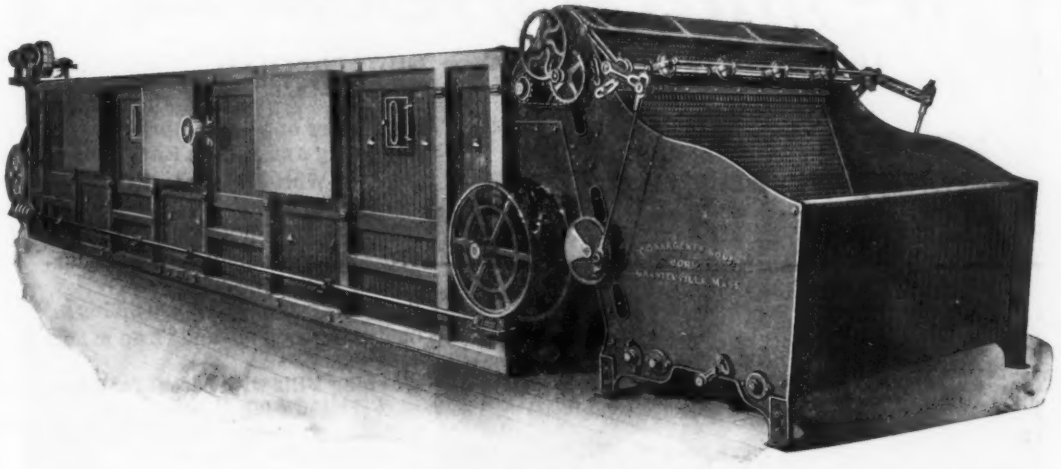

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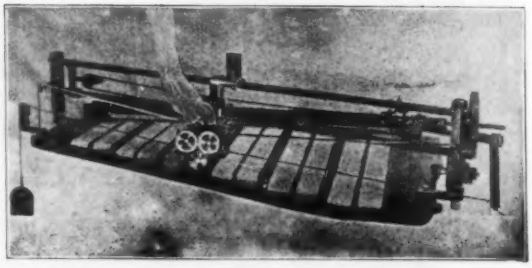
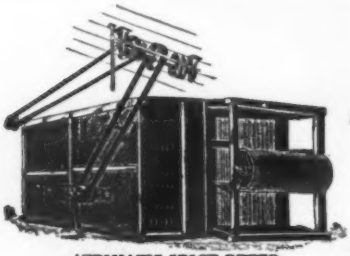
Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear. Carbonizers, Ventilating Fans, Yarn and Wool Scouring Machines, Cloth Washing and Dyeing Machines, Tom Toms, Chroming Oxidizing Machines.



WEB FEED.



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Garnett Machines and Pickers.

We Recloth or furnish New Metallic Toothed Cylinders and Feed Rolls.

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Wm Whiteley & Sons Ltd.

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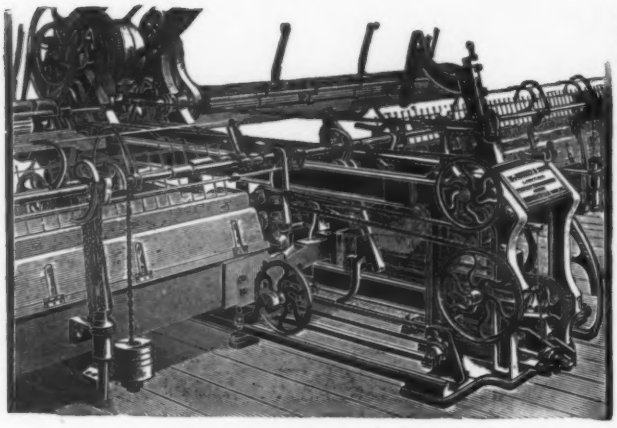

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Makers of all descriptions of Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines,

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Warping Mills with Patent Sectional Dividing Apparatus.

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Second-hand Tentering Machines in good repair at low prices.

Conclusive evidence of merit—repeat orders from leading mills after a year's constant use.

VENTILATION & HUMIDIFICATION — BELL PURE AIR AND COOLING CO. — TRADE MARK

The reason why we are getting these repeat orders is not hard to find—'tis the continuously satisfactory results that are secured by using the

Bell Humidifying System

With its even and automatic regulation of humidity from card room to cloth room, the uniformity of conditions are maintained, that improve the quality and increase output.

Send for catalogue and prices.

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WROUGHT STEEL

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Patented in the United States and Foreign Countries.

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Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

Sold by the Leading Supply Houses all over the WORLD.

The American Pulley Co.,

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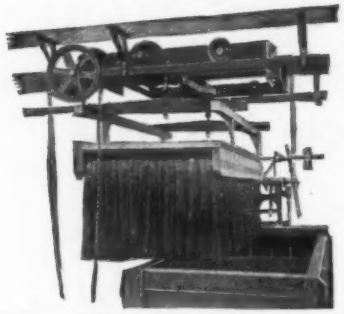
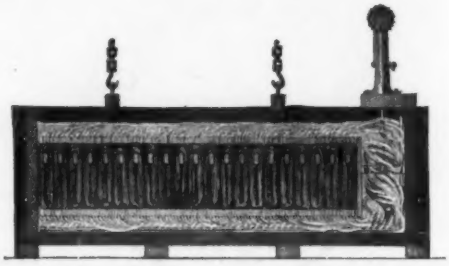
The Hussong Dyeing Machine

Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904. June 5, 1906.

THE ONLY MACHINE THAT WILL DYE SULPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine Suspended.



Longitudinal Sectional View, showing the circulation of dye liquor through the yarn when in operation.

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff, Saving of 75% in Labor, Makes No Waste Whatever, Requires but Little Power to Operate, No Friction on the Material, Leaves the Yarn and Slubbing in its Natural Condition.

Built by the **American Dyeing Machine Co., Office 609 Pearl St., Camden, N. J.**

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Reinforced Concrete Mill Buildings

We are prepared to furnish plans, specifications reinforcement details and supervise the construction of textile mills and industrial plants in general. Mill buildings built of this material are cheaper than the regular mill constructed buildings. We have several now under construction.

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REPAIRS FOR RABBETH SPINDLES

A QUESTION OF MONEY

It's a question of money to you; there are three things we want to know.

I. Does exhaust steam escape from your plant?
II. Do you have any use for hot water?
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If so, tell us.
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We can save 10% of the fuel
Used by dye houses,
And there will always be
Plenty of boiling water ready
So the men won't have to wait.

Exhaust steam is as good
As live steam for drying,
But costs nothing.
Just pass it through
A Cochrane Oil Separator
And the condensed returns
Can go back to the Heater
And to the boiler.

Save Return Tanks,
Expansion and Muffle Tanks
And Traps.
A Cochrane Heater does more
And costs less.
We can refer to plants
Where we have saved
18 and 25% of the fuel bills.
Our experience
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When I Ask For
STEPHENSON BAR BELT DRESSING

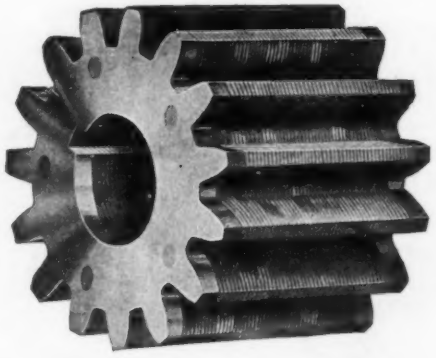
I want to see this Cog-Wheel face Trade Mark on what comes. It does the trick. Handy and ready. No heating before using. Runs my belts slack no matter what the load, and keeps them in condition for half the money the firm used to spend, it lasts so long."

Always glad to send a Free Sample on Request.

Red Label for Leather. **Green** Label for Rubber or Canvas.
No **one** kind is good **for all** belts.

Stephenson Mfg. Co., Albany, N. Y.

A
Noiseless
Pinion



The Durable New Process Kind

This pinion is made up with bronze flanges part of face which is the style of construction which we recommend for very severe service. Our new catalogue shows other styles. Let us send it to you.

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BLEACHERIES ARE RAPIDLY ADOPTING THE CELL SYSTEM for opening and drying their goods as drawn in ropes from the bins. The string of cloth is opened up by a scutcher, passed through a water mangle, over an expander, through a Cell Dryer, and is wound on a winder which does not have to be stopped to remove a roll of cloth. A speed of 125 yards may be maintained, if desired, even on heavy goods. A two string machine gives, then, a production of 250 yards of cloth per minute, from rope to roll. Only one attendant is required for the complete plant. The whole outfit takes up but 15 to 20 feet of floor space. Send to 84 State Street, Boston, for photographs and blueprints.

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We are also distributors of BURT VENTILATORS.

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An increase of 30 mills since March

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Our "Ready-to-Use" Frictions are easily attached to looms now in use and enable manufacturers to get at once the increased efficiency that Cork Inserts give, without the expense of new clutches. **The cost is small, 14" and under, $1.00. Over 14" to 16" inclusive, $1.25. Over 16" special prices.**

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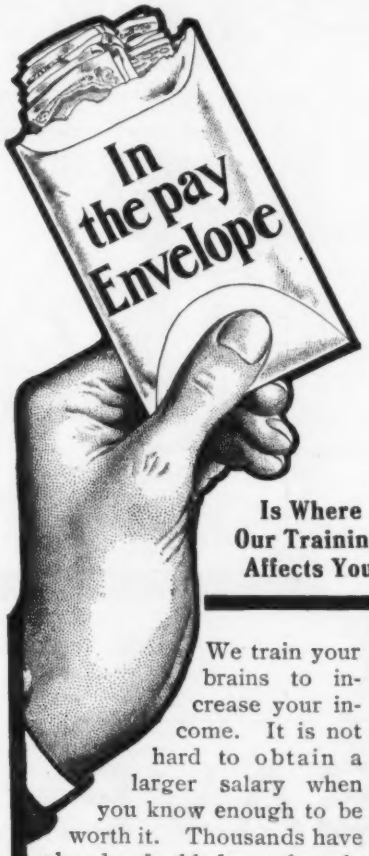

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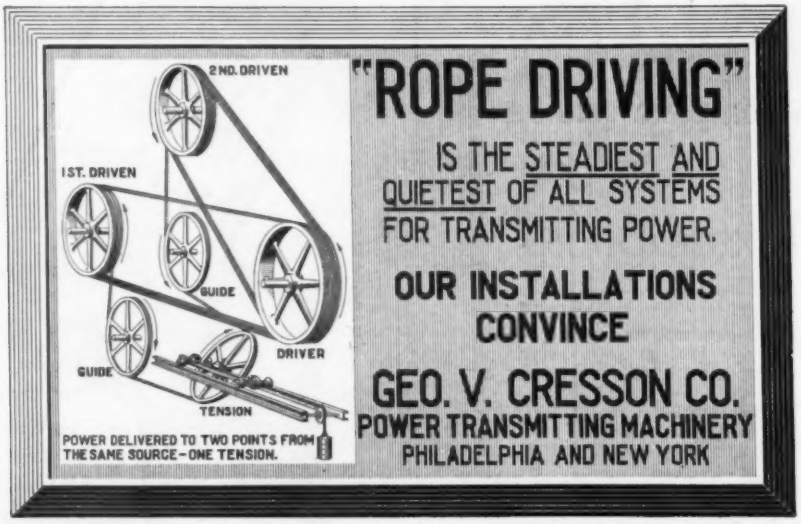

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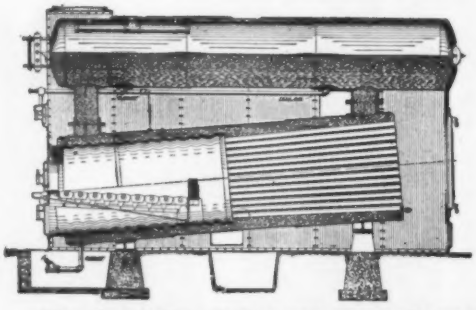

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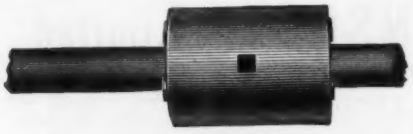
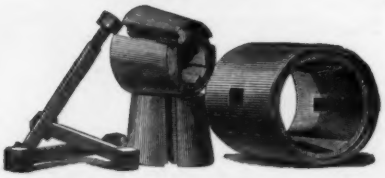
Built in Canada by ROBB ENGINEERING CO., Ltd., Amherst, N. S.





THE "SELLERS" MAKE OF

DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

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Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

SEND FOR CATALOGUE AND PRICE LIST.

MACHINE TOOLS.
INJECTORS. POWER CRANES.

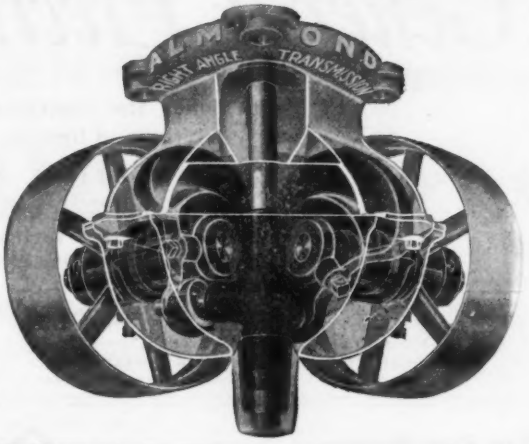
Is Your Mill Crowded?

Put in a countershaft at right angles to the main line, using an

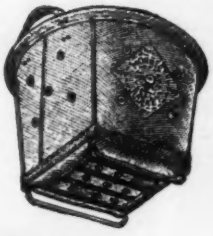
Almond Right Angle Transmission

No cost of maintenance, no noise, dirt nor trouble. Use the floor space now being wasted in the end of the mill. Write to us sending details.

T. R. ALMOND MFG. CO.
85 Washington Street, BROOKLYN, N Y.



Morris Duck Steaming Baskets



Round, square or oblong—any size to fit steam box.

Brass eyelets used throughout—quantity and arrangement *to suit you*. Light in weight. Very strong and durable. Used in hundreds of mills—*will be in yours* when you know their worth.

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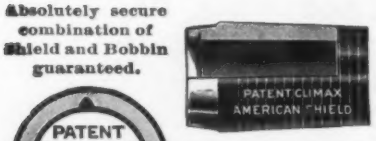
Absolutely secure combination of Shield and Bobbin guaranteed.



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Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

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Added Strength and Absolute Security.

Samples and Prices on Application.

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General Electric Company

Furnishes the Electrical Apparatus for driving and lighting all classes of

TEXTILE MILLS

This Company has installed more than 75% of the total horse power used in the electrically driven textile mills of the United States. Information given and estimates furnished at any office.

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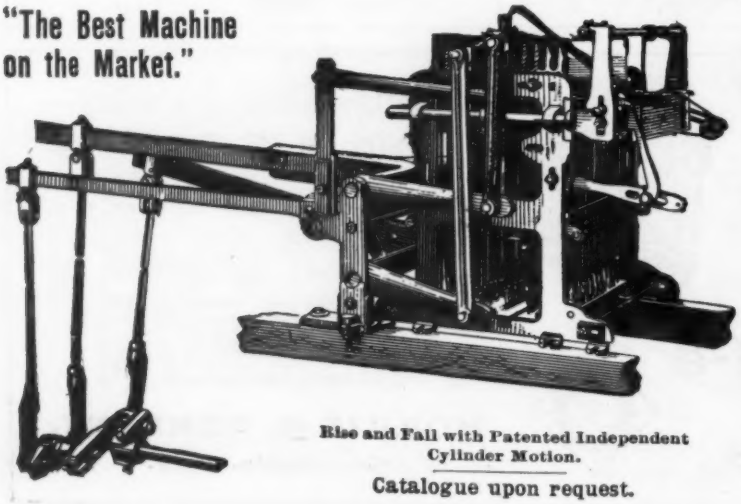
717

"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

USE THE

HALTON JACQUARD

Original Fine Index Machines

Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

THOMAS HALTON'S SONS,

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PHILADELPHIA

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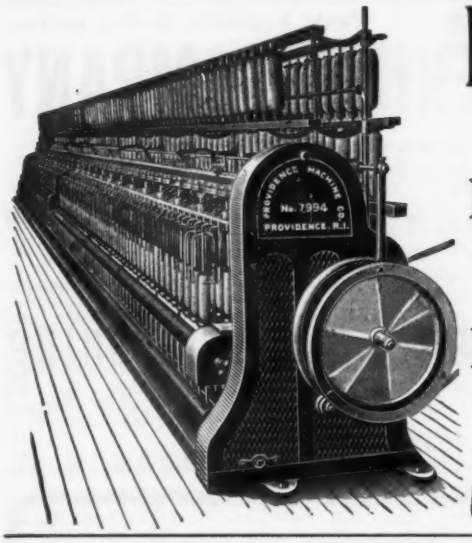

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Improved Worsted Roving Frames

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The "BODDEN" Flyer

For QUALITY OF FINISH
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HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

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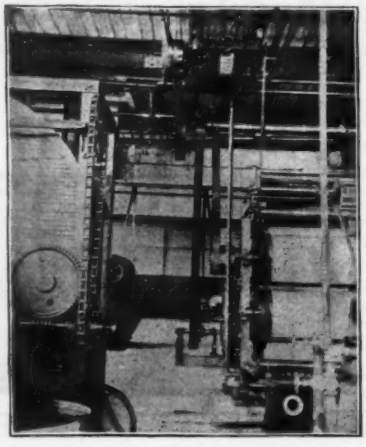

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THE MODERN WAY

of driving Drying Cans, Tenter Frames, Mangles, etc.

Better Quality of Finished Goods. More Production

than possible to obtain with step cone drives.

More Economical. Requires Less Attention

than variable speed engines.

The Lowell Textile School desiring the most up-to-date variable speed drive has recently installed **THE REEVES** on Drying Cans and Padding Machines. See Illustration.

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AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

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Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty year receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDLALS and others.

The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against infringers and users of infringements.

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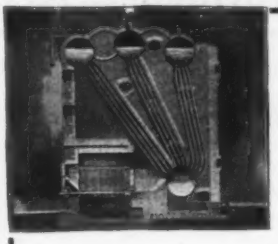
ESPECIALLY ADAPTED FOR MILL USE.

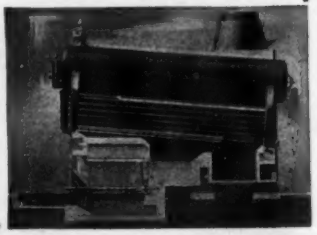
SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.



The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



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MURPHY IRON WORKS

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TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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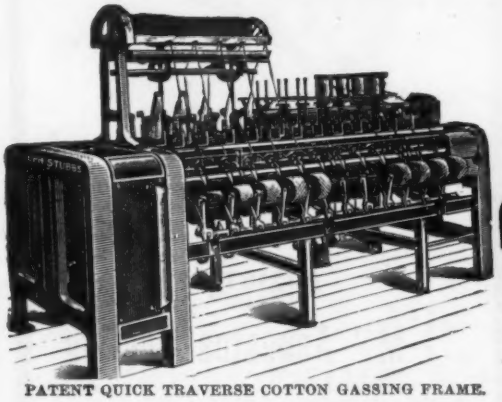
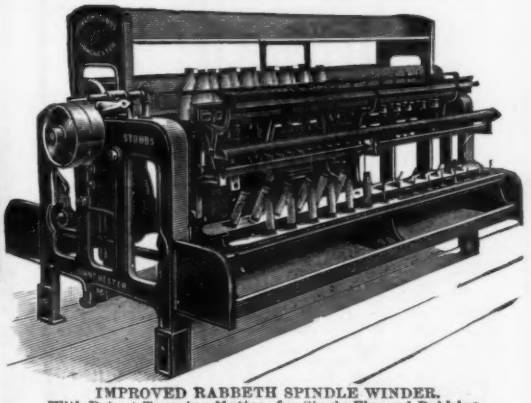
SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

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DOBBINS' ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs.

Adjusts itself to an uneven load, runs without vibration. Unusual capacity for high-class work.

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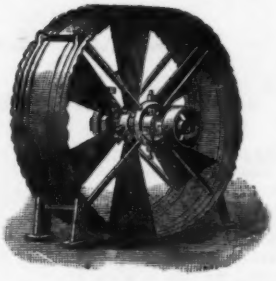
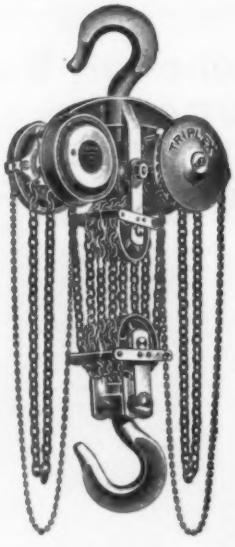


Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light.



Large Size Chain Blocks

are specially available for installing heavy machinery or as the lifting mechanism on heavy traveling cranes in power plants.

The Y & T TRIPLEX BLOCK is made up to 40 tons capacity and is in every way an efficient and dependable hoist.

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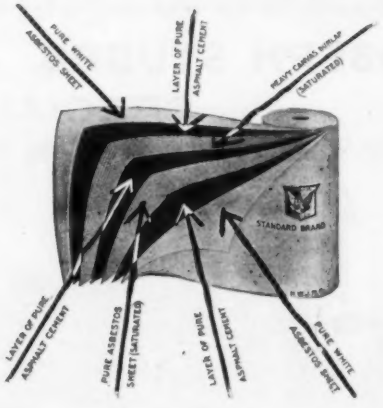
PURE WHITE ASBESTOS SHEET
LAYER OF PURE ASPHALT CEMENT
HEAVY CARRIER FELT (SATURATED)
STANDARD BRAND
LAYER OF PURE ASPHALT CEMENT
PURE ASBESTOS SHEET (SATURATED)
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Analyze "J-M" Asbestos Roofing

Look into its construction make a comparison with any and all other prepared roofings—then decide for yourself on the merits of our claim.

"IN A CLASS BY ITSELF"

Being made of *asbestos*, an indestructible and fireproof material, it is the **Cheapest-per-year** roofing. Our catalogue 302 tells the reason why. **Write nearest branch for a copy today.**

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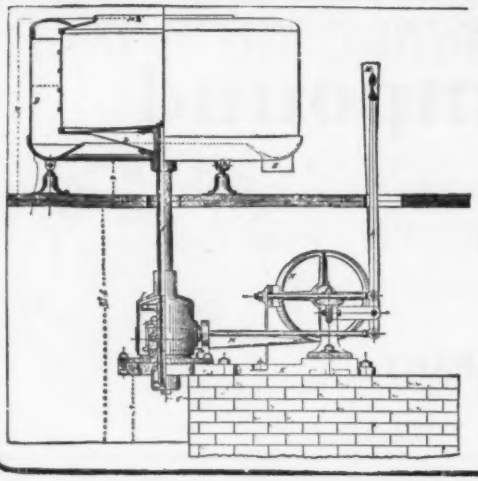
587



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Special Machines for Acid Work.

SHAFTING, PULLEYS,
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Incorporated 186? Founded 1845.

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THE HASKELL-DAWES MACHINE CO.,

MANUFACTURERS OF

Spinning, Forming, Twisting and Laying Machinery.

We build the very best types of

MODERN, HIGH SPEED, GEARED MACHINES,

and which are adapted for working Manila, Sisal, Jute, Hemp and Cotton Fibre.

Agents SAMUEL LAWSON'S SONS' Jute and Flax Machinery.

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Lane Patent
Steel Frame Canvas Mill Truck

FIG. 27

Regularly fitted with our noiseless, rigid frame iron wheels, (removable for cleaning) as shown in cut.

Also furnished on swivel anti friction casters one under each corner, or on rubber tread wheels when specified.

Materials and workmanship are of highest grade throughout.

Manufactured by

W. T. LANE & BROTHER

POUGHKEEPSIE, N. Y.

Can be purchased through mill supply houses

One of the best softeners for yarn or stock ever used

Breton Compound

is designed to assist oils in emulsion with water instead of alkali. Made of sweet edible fat, its use saves both oil and soap Directions for use sent on application.

BORNE, SCRYMSER COMPANY,
80 South Street, New York.
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E. B. BADGER & SONS CO.
ESTABLISHED 1841
COPPERSMITHS

STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test.

Equal, if not Superior, to any in the market

66 Pitts St.
BOSTON
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It Attracts Universal Attention Because it is THE BEST

BADGER'S
Fire Extinguisher

Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

BADGER'S THE LATEST AND MOST APPROVED
Automatic, Chemical, Hand Fire Extinguisher Made

BADGER FIRE EXTINGUISHER CO.
42 Portland St., Boston, Mass., U. S. A.

Crabbing, Steam Finishing, Opening and Folding, Tacking, Sewing, Squeezing Machines

BIRCH BROTHERS, SOMERVILLE, MASS.

ALBERT BIRCH, TEXTILE MECHANICIAN

Bleaching and Napping Machinery

Lower the temperature Raise the profits

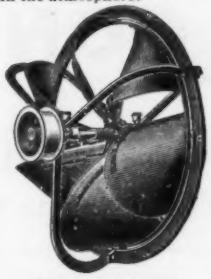
That "tired feeling" which is the sure result of hot stuffy work rooms is unknown where a

Berry Wheel

keeps pure air constantly circulating in every part of every room. *Make your work rooms fit to work in.*

Very efficient and economical for drying

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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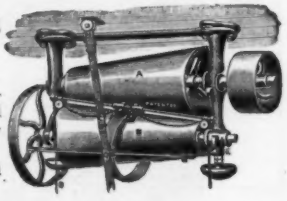
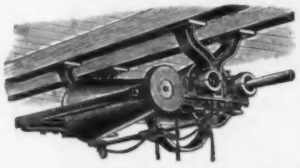
Variable Speed Countershafts

The Evans Friction Cone Pulleys

will drive your machines at any desired speed from 1 to 6 by simply pulling a cord. They are guaranteed to do your work.





We'll furnish them for either floor or hanging use. Over Ten Thousand Sets in Operation in this Country and Europe. Send for Catalogue.

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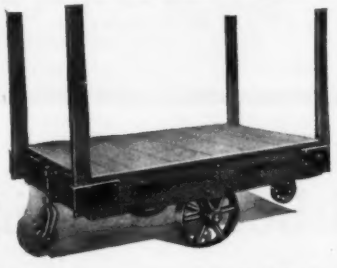
G. Frank Evans. - Newton Center, Mass.

Chase Roller Bearing



TRUCKS AND CARS
of all kinds for all purposes

Write Us for Complete Catalogue

Chase Fdy. & Manufacturing Co.,
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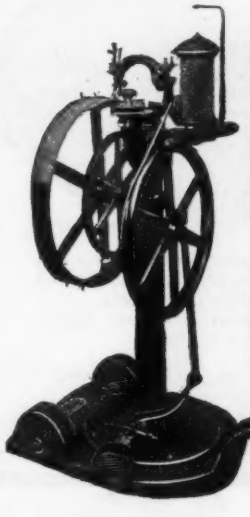

Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,
Salem, Mass., U. S. A.

HYDRAULIC PRESSED

CONCRETE BLOCKS

WRITE FOR INFORMATION

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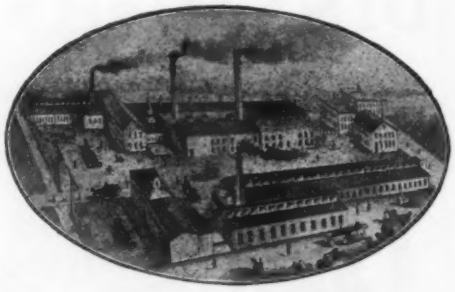
19 Federal Street, Room 58 Boston, Mass.

D. F. WATERS

Germantown Dye and Bleach Works



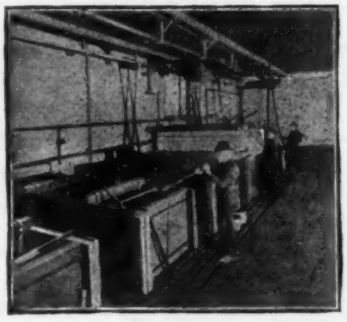
Dyer and Bleacher of Cotton Warps and Mercerized Yarns, Woolen and Worsted Skein Yarns, Eiderdown Cloth, Fine Worsteds for Dress and Knit Goods, Cotton and Woolen Hosiery.

Sample Cards Sent on Application.

53-55 Wister St., Germantown, Pa.

Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.

The saving of labor will more than pay for a machine in a few months.

Capacity; 2,000 lbs. a day per man.

Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

D. F. WATERS,

53 and 55 Wister St., GERMANTOWN, PHILADELPHIA, PA.

G TRADE MARK

This Trade Mark distinguishes our Pickers

We know that our rawhide loom pickers are as good as it is possible to make and for the purpose of identifying our product we stamp each picker with our trade mark. Pickers which bear this trade mark are always uniform in quality.

Formerly Loom Picker Co. **GARLAND MFG. CO., Saco, Me.**

WATER TOWERS
IRON OR STEEL

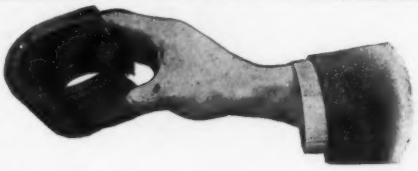
for Fire Protection and Domestic Service.

Built in all sizes.

Write for catalogue.

Plans and prices cheerfully given.

Tippett & Wood, Phillipsburg, New Jersey



He Was From Our State On the Subject of Belting.

"How is it," a man asked us "that a Sable Belt wears so much longer than other belts and why is it that where other belts slip and burn, a Sable Belt sticks to the job and to the pulley?"

We told him that Shultz Sable belting wears the longest because in our process of tanning, we preserve the original strength of the hide. The fibres are long, dense and interlaced as in the original rawhide. Sable Belting is rawhide inside, with the exterior tanned just enough to produce a kid-like surface. It is not tanned all-through like other belts. Tanned all-through belts become hard, stiff and brash, and unless they are continually "doped" with dressings, slip on the pulley and burn.

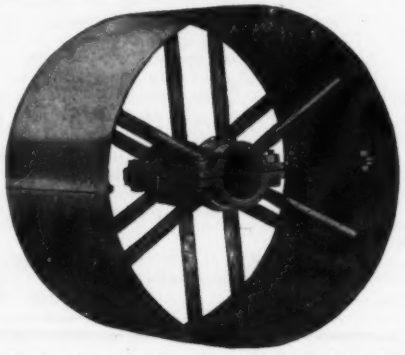
Again, we explained that because it is rawhide inside, Sable is also the most pliable belting and bends evenly to the pulley.

You see the point! There is no cling to a hard, tanned through-and-through belt. It has to be put under heavy tension to prevent slipping and that wastes power and belts and bearings. The kid-like surface of a Sable Belt hugs the pulley while the long, tenacious rawhide fibres of the interior give it flexibility.

We want to send you a Sable Belt on 60 days' trial and if it is not all we say send it back, all at our expense.

Shultz Belting Company,
ST. LOUIS, MO.

New York	Boston	Philadelphia
111 Chambers St.	114 High St.	116 No. 3rd St.



Twelve Arm construction used on pulleys 12" to 28" diameter inclusive, 14" to 24" width of face inclusive.

The Latshaw Steel Split Pulley runs true, is a double belt pulley, bushed to fit all shaft sizes, furnished by mill supply dealers throughout the U. S. and Canada.

ASK YOUR DEALER

Latshaw Pressed Steel and Pulley Co.
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Large and complete stock of Latshaw Pulleys carried in Boston by Brown-Wales Co. Chicago; R. R. Street & Company. New York: Henry J. McCoy Co. The Jeffrey Manufacturing Company, Montreal, Canada.

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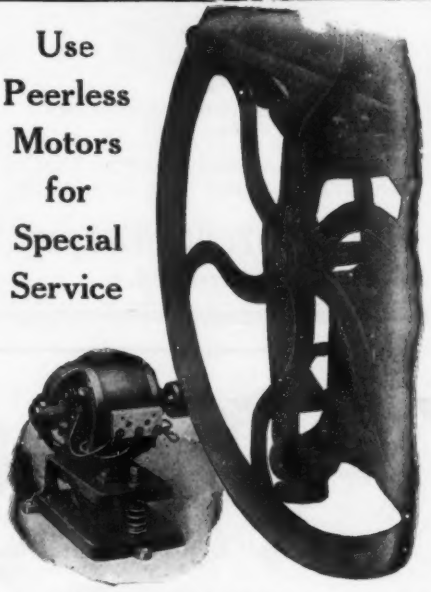

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Designers and Manufacturers of Direct Current Motors for any service.

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¶ Fine stamping on selvage or ends of piece goods, hosiery, underwear, etc., in gold, silver and colors by the cheapest process known. No machinery required, dries instantly and done as quickly as goods can be handled.

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FOR VENTILATING AND FOR REMOVING STEAM FROM THE DYE HOUSE.

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Are you a textile manufacturer or a cotton mill superintendent and not entirely satisfied with your present location in the East, North or South? If so, let us put you in touch with one of the cities in Arkansas and Indian Territory along the

Rock Island FRISCO

At several large cotton shipping points where cheap fuel would be procurable and where good labor conditions exist, the majority of the capital would probably be subscribed locally or in lieu of this a substantial bonus would be given.

The especial advantages of locating at a point with raw cotton at your very doors are obvious, as the amount saved in freight on raw cotton ginning, compressing and handling should not be overlooked.

Write today, as the industrial organizations at a number of points are ready to act at once, now is the time to secure an excellent proposition.

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M. SCHULTER, Industrial Commissioner,
Rock Island-Frisco Lines,
Frisco Building, ST. LOUIS, MO.

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Albany Grease

REG. U.S. PATENT OFFICE

Is the Best, Cheapest, Cleanest and Safest Lubricant.
Does not Drip, Splash or Waste Away

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Send for FREE sample cup and can of "Albany Grease" giving diam. of oil hole, depth of oil hole from top of cap to journal, where to be used and firm's name.

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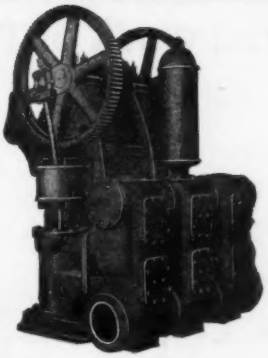

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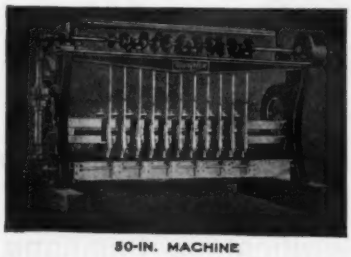

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FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

BUILT WITH ANY REQUIRED NUMBER OF NEEDLES.

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60 SECONDS in a MINUTE
60 MINUTES in an HOUR
60 HOURS in a WORKING WEEK

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Do you realize that this is the same as paying for 60 hours and working 59 hours?

Check up this slipping in your plant—then remember that Leviathan Belting runs better and delivers power more constantly running slack than any other tight.

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on raw stock if discharged by our Hydraulic Lift.

All styles for raw cotton and yarns, alsofor knit goods, cloth and laces. Many already in use.

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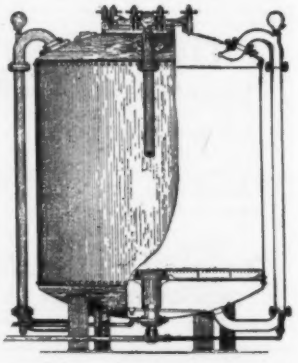

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Used with starch batches.

Excelsior Softener prevents sticking or gumming while the yarn is passing over the cylinders and the dropping of starch during the process of manufacture. Makes the yarn flexible and strong, avoiding many unnecessary delays in the weaving room. Insures clean, sweet smelling goods. *It is economical and reliable.* Send for prices, samples aud particulars.

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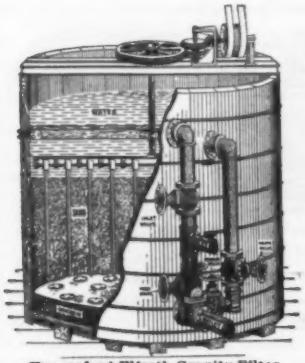

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the only filter which exceeds its guarantee.

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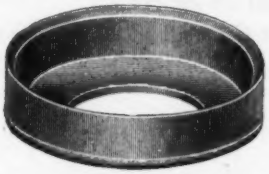
Will reduce your cost of maintenance and increase the efficiency of your machines



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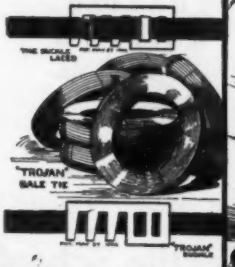
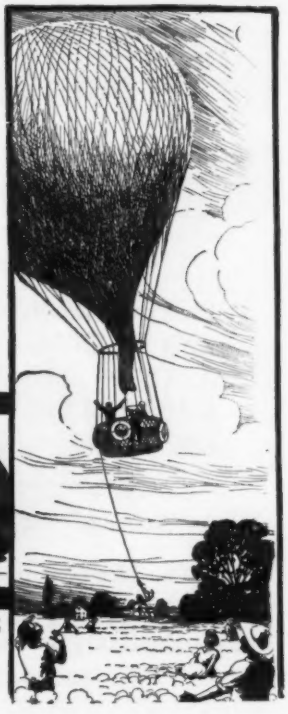
With the present high prices of rope Trojan Band and Buckle is a money saver.





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Send us $3.75 to cover cost of Bracket and transportation charges, and we will send you one of these brackets. If for any reason you do not like it, you may return to us and we will refund your money. We will send you upon request, free, bulletin No. M137. It tells also of our complete Telephone Exchanges.

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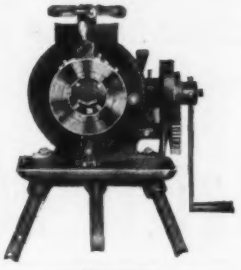

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A mill outfit easily portable, convenient to handle, will stand abuse and need few extras.

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THE GREEN BELT

Withstands heat, moisture gases and acid fumes better than any other belt

This belt is specially tanned by a process entirely different from any other belt tannage.

The "Alpha" is particularly adapted for small and high speed pulleys, is a non oil absorbing belt and has no equal in Dye Houses, Bleaching and Finishing Rooms. Is very tenacious and will drive one-third more that oak belting. Test one at our expense. *Write for particulars.*

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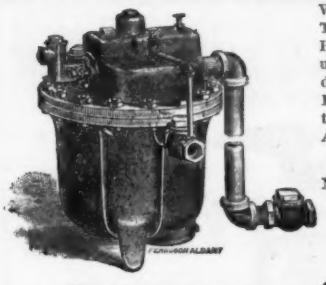
NEW FEATURES: Wearing Parts, Valve and Seat Renewable.



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40th Annual Statement

January 1, 1907.

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Reserves,	1,931,847.29
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The HARTFORD was the Pioneer Company in the field of Steam Boiler Insurance, and it is the only company which makes a specialty of and does exclusively a steam boiler inspection and insurance business.

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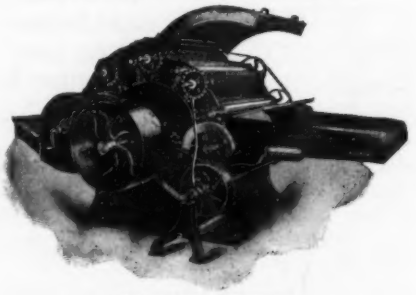

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Roving Spindles and Flyers a Specialty. Light Forgings.
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For use in

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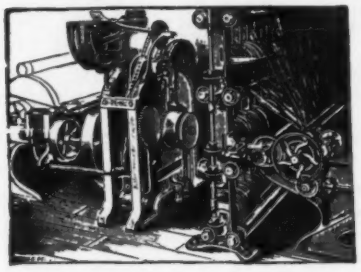

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With all the latest improvements for Wool Cards. The latest and best and only Feed that will make yarn positively even.

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CHOQUETTE WASTE SAVER. Saves card fly.

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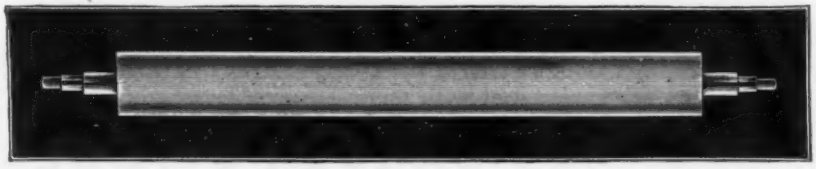

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brand of oak tanned, short lap leather belting is so generally specified by discriminating buyers, because Experience has taught them that it is the best and therefore the cheapest.

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we can make for you the just-right size required for wrapping your goods. Saves time and paper. *Pays big.* Write us for full particulars, prices and samples.

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Sole builders of the Green Fuel Economizer in the United States. Also Fans for Mechanical Draft, Conveying Materials, Drying and Moistening, etc. Blowers and Exhausters, Steam Heating Coils and the Green Air Heater. Heating and Ventilating apparatus. Send for Book "T W" on Fuel Economy and Fan Catalog.

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Our Machine Will Save Your Oil and Wiping Material.

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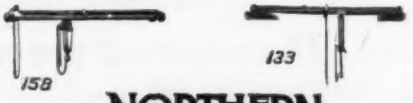

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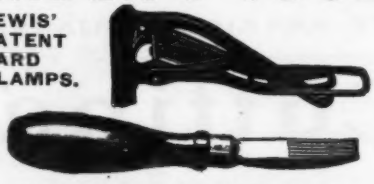

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For setting up Bent Teeth of Card Clothing. Also a variety of other tools used by Carders and Manufacturers.
Send for circular.

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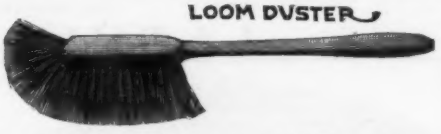

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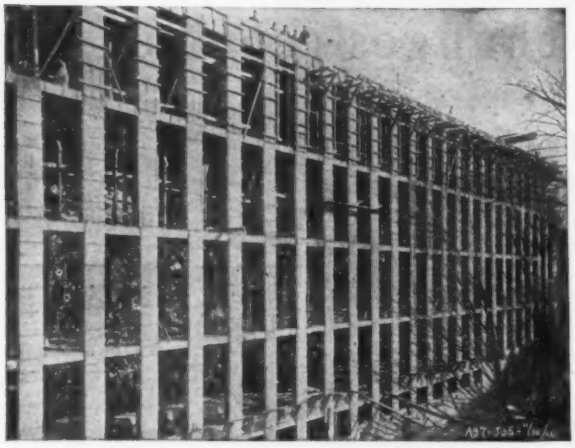

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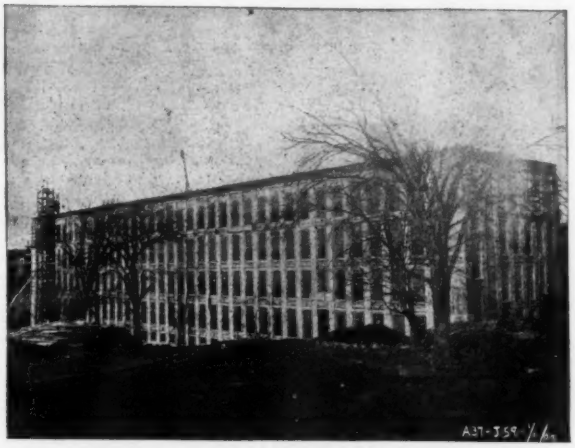

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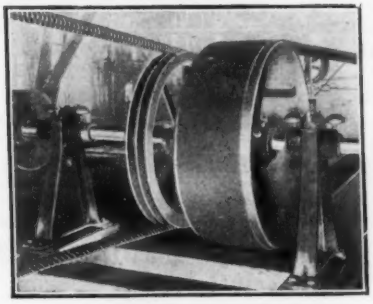

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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

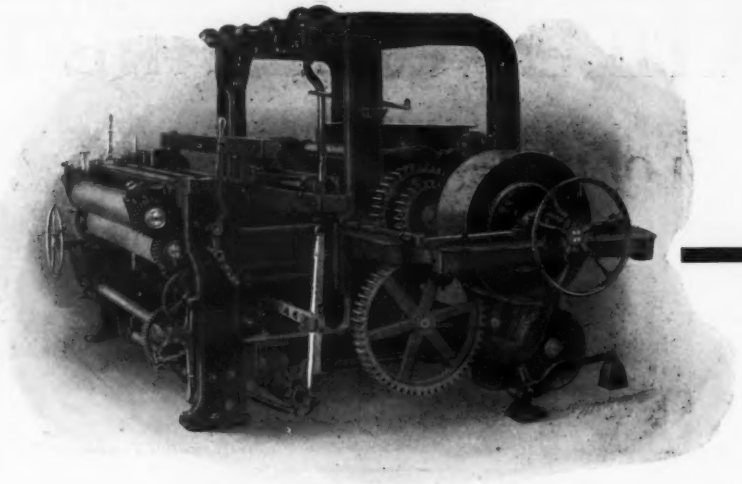
PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers' names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendant and buyer, class of goods made, the machinery, including number of knitting machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.



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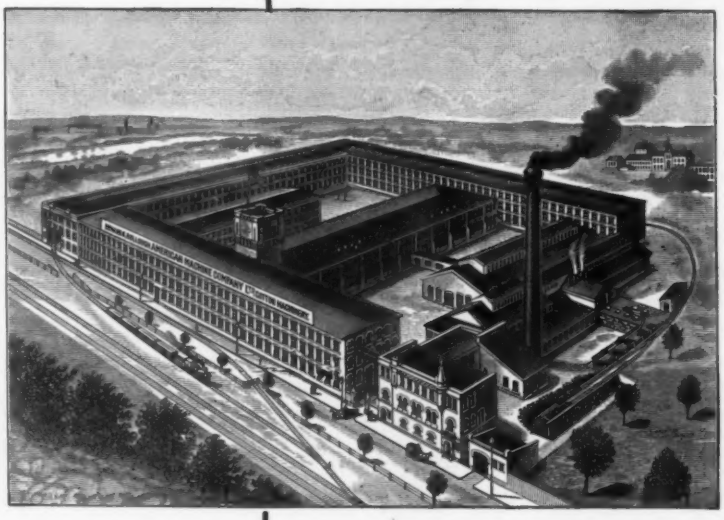

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VOL. 33 (NEW SERIES.) JULY, 1907 No. 4

Monthly Comment.

Cotton Exchanges.

In the discussion that has raged over the system of dealing in cotton on exchanges, the public has been favored with the views of exchange managers, cotton planters, cotton spinners, bankers, the more or less duly authorized representatives of all these special interests, as well as with the views of editors, whose business it is to discuss all questions of current interest. In all the recent torrent of words, however, the one thing conspicuous by its absence has been a careful statement of conclusions by one who has applied the scientific method to the study of the question.

This deficiency we are able to supply in this issue by presenting the article entitled, "The Cotton Exchange Problem," by Prof. S. J. Chapman, of the University of Manchester, Eng. He has studied the question for years without the slightest selfish interest in any of its many commercial phases, and with the sole object of determining the truth. Knowing how great was the need of a clear understanding of the elementary principles governing trading in cotton, we arranged with Prof. Chapman for the preparation and publication of his article in this issue. It is especially opportune at this time of peaceful revolution, when the public has taken the bit in its teeth and is dragging many of our institutions from their ancient locations. It is a clear, careful statement of what the investigator believes to be the truth, and by one who is not afraid to say "I do not know,"—in this respect in striking contrast to the large number who "know it all."

We commend Prof. Chapman's article to all interested in the cotton exchange problem, and particularly to the Bureau of Corporations at Washington, which is now engaged in investigating the question by the authority of Congress.

Profits in Artificial Silk.

The reports for 1905 of several French and German artificial silk mills disclose some remarkable profits. The French Chardonnet Co., with a capital of $400,000, reports a profit of $880,000, paying a dividend of 50 per cent. and carrying the balance to the reserve. The Vereinigte Glanzstoff-Fabriken, at Elberfeld, Germany, report a profit of $500,000 with a capital of $625,000. The Vereinigte Kunstseide-Fabriken, of Frankfort made a profit of $600,000 on a capital of $875,000. While these profits seem enormous as compared with the capital, the large surplus funds of the companies should be taken into consideration, as they are in fact equal to so much working capital.

S. N. D. North on Tariff Revision.

[We take pleasure in publishing in its entirety, as suggested by the writer, the following letter from Mr. North, whose views are of especial interest because of the prominent part he has taken for years in the revision of the tariff. We will comment here on but one sentence from Mr. North's letter. He says: "I do not think there can exist any doubt, in the minds of disinterested students of public opinion, that this revision when undertaken, must be a revision downwards." That statement could have been made with equal force in 1892, just before the Wilson bill atrocity. What the American people need now, as then, is not "students of public opinion," but students of the public welfare to guide them, and who, like William McKinley, are ready to go down to defeat and political annihilation in defense of the principle of protection to American industry.

However opinions may differ as to Mr. North's recommendation of a horizontal reduction as a method of revising the present tariff schedules, there can be no difference of opinion regarding the clearness, force, precision and unreserved frankness with which he makes his recommendation. Would that all statesmen in and out of office might follow his example in this respect. Ed.]

Department of Commerce and Labor,
Bureau of the Census,
Washington, July 1, 1907.

Mr. Samuel S. Dale, Editor Textile World Record.
Boston, Mass.

Dear Sir: I beg to acknowledge receipt of your letters of June 14 and 24, requesting a copy of my address before the Alumni Association of the Philadelphia Textile School, in order that you may obtain from it "an explanation of the general foreign trade policy (of the administration) upon which the commercial agreement with Germany is based."

My Philadelphia talk made no reference whatever to the commercial agreement with Germany, and therefore would be of no service to you. I did not give it to the press for what seemed a good and sufficient reason, viz: It was an expression of my personal views on the subject of our future trade relations with other countries. I had no authority to speak for the administration or any part of it. In fact, in some respects my opinions as stated at Philadelphia do not coincide with those I understand to be held by the Department of State. I was confident that, in view of my association with the German negotiations, anything said by me would be construed by the press as a more or less official utterance, and the publication might therefore result in misunderstanding. Your letter proves that I was right.

If my personal views on the subject are of any value to you, and on the understanding that they are not to be construed as representing "the views of the administration," I will be glad to briefly outline them. I believe they are substantially in accord with the resolutions unanimously adopted at the recent convention of the National Association of Manufacturers in New York.

I believe that the tariff situation now existing in many foreign countries requires the United States, for her own protection and for the promotion of her foreign trade in manufactures, to adopt the maximum and minimum tariff system, with commercial treaties or agreements based thereon. The sooner we adopt this policy, the more rapidly we can develop that trade.

I believe that our present tariff should be made the maximum tariff, and that the minimum tariff should be based upon section 4 of the Dingley tariff act of 1897. That section was framed with great care, in the conviction that the 20 per cent. reduction of duties for which it provides, could be applied to imports from any country extending equivalent concessions to the United States, without injury to any American industry. If this was true at the time of its enactment, it must certainly be true after a lapse of ten years during which the United States has experienced an industrial development surpassing that of all other nations.

Most unfortunately, the 4th section of the Dingley tariff act was limited in time, to two years from the date of the passage of the act, and is therefore now inoperative. I believe it should be re-enacted, at the next session of Congress, without this time limit. If there happen to be some few industries which would suffer, by reason of a 20 per cent. reduction from existing duties, or if any weak spots in the existing tariff have been developed by experience, suitable provision should be made therefor, in the same law which re-enacts section 4.

I believe that the legislation above outlined, if promptly and properly enacted, would do away, for the present at least, with the otherwise inevitable necessity for a wholesale tariff revision, with all that that involves. It does not seem wise to disturb the present tariff until after the best use has been made of its high rates of duty to secure from other countries the best tariff concessions they offer to any other nations.

I have spoken of tariff revision as inevitable, unless this intermediate step is taken. This is only an individual opinion. But it is proper to add that my intercourse with public men from all parts of the country, justifies the statement that there exists a practically unanimous conviction that the next Republican national platform must and will contain a distinct and unequivocal pledge that immediately after the Presidential election, the Republican party, if successful in that election, will proceed to revise the tariff, at an extra session of Congress. I do not think there can exist any doubt, in the minds of disinterested students of public opinion, that this revision, when undertaken, must be a revision downwards.

You realize the disturbing effect upon all business which always accompanies a general overhauling of the tariff. I have seen this effect, at close range, in 1890, 1894, and 1897. The longer a similar experience can be postponed, the better, in my judgment, for the business and material interests of the country. The procedure I have above outlined would postpone it for several years; for it would result in a very substantial and uniform reduction of duties—one-fifth of existing rates—without disturbing business to any appreciable extent. The moment such a proposition was favorably entertained by Congress, every manufacturer would be able to adjust himself to the new situation involved, and go right on with his business, very much as though nothing was about to happen. And the widespread sentiment demanding tariff revision would accept the law as, on the whole, the best adjustment of this enormously important question which could be effected from the point of view of the uninterrupted prosperity of the country, at the present time.

If the same law which re-enacts section 4 of the Dingley tariff should provide for a permanent tariff commission, to study existing conditions with respect to each and every industry, as determined by sworn testimony and expert investigation, and to report to Congress from time to time the exact rate of duty necessary to equalize wage and other conditions, as between this and other countries, I believe the American people would patiently await the results of the commission's work; and that thus in due time this purely business question would be taken out of partisan politics, and hereafter determined on purely business grounds. We shall never have a better opportunity to establish our revenue and tariff system upon a scientific basis. The time will sometime come when this will be done; and the time to do it is now.

The views herein expressed are not of recent growth. In 1902 I wrote and published in the Bulletin of the National Association of Wool Manufacturers, of which association I was then secretary, a paper entitled, "The Need for a Permanent Tariff Commission," in which I went at length into the argument in its favor, concluding with the statement that with such a commission properly organized "it would be possible in the course of time to do away altogether with the demoralizing practice of periodical wholesale tariff revision."

In this connection one statement you make calls for comment. You speak of "the break between me and my former associates." I have no evidence that any such break has occurred. I am as good a protectionist today as I ever was. I always differed with some of my associates on some of the details of tariff policy; and I doubt if there are any among them who would question my right to entertain my own convictions on matters of public policy, or would regard those convictions as supplying any reason for the alienation of former friendships.

Recurring to the German commercial agreement, I have just written, at the request of the editor of "American Industries," published by the National Association of Manufacturers, a full explanation of the reasons for and the probable effect of the new customs regulations which constitute a part of that agreement, to which I refer you.

I think I have successfully demonstrated that these new regulations, taken together, will result in the most effective remedy for the great evil of undervaluation which has ever yet been devised.

Should you care to do so, you are at liberty to print this letter, provided you publish it in its entirety.

Very truly yours,
S. N. D. North,
Director.

The Compulsory Working of Patents.

In our comments on the Philadelphia convention of the American Cotton Manufacturers' Association, we coupled our reference to George Otis Draper's excellent paper on "Patents" with a suggestion that Mr. Draper take an early opportunity to state his views on the international phase of the patent question. This he has done in a recent issue of "Cotton Chats." His statement of the case, which follows, is of especial interest in connection with the officially reported intention of a large German dyestuff company to establish branch works in England, as a result of the impending legislation making the validity of British patents of foreign inventions contingent on their being worked in the United Kingdom:

In the printed comment on the paper on patents presented at Philadelphia, the question is asked why the author did not discuss the making the validity of a patent contingent on it being worked, calling attention to the fact that foreign inventors can absolutely prevent the use of their ideas in our country by patenting them without allowing anyone to work the same, and thereby force us to buy in their country if we need the article in question. In the first place, the writer has never heard of such a case in actual practice, and, secondly, such a change in our system would introduce evils of far greater magnitude. Our government does not allow a patentee to claim more than he can disclose. It does not often allow broad patent claims. An inventor, therefore, who has really discovered a valuable invention in mechanism, may, by his own discovery, have pointed out to clever minds, a dozen, or even a hundred, ways of producing similar results, requiring many patents to secure protection. Now, if one mechanism will accomplish a result properly, it would be folly to insist on having a dozen, or a hundred, different mechanisms manufactured, especially if all the patents were owned by the same company. In our spindle business, we controlled over 400 patents at one time; but the trade would have been perplexed and upset if we were made to offer 400 different mechanisms to them for selection. It would also be a needless hardship for us to be prepared to furnish 400 different

mechanisms to customers, the expenses of such preparation being necessarily added to the costs of our business and the prices of our products.

An inventor is often limited in the scope of his claims through carelessness or incompetency in his patent attorney. Such errors may be obviated at times by taking out other patents covering the constructions made free through the limitations of the original patent. Even here, it would be needless waste if all the patented constructions must be put in actual working.

There are foreign countries that insist on having patents worked. This usually means nothing but extra trouble and expense to an inventor, who may have to arrange for the manufacture and advertising of a device which, while patentable, is not really ready for the market, or which is taken out to protect another patent and is not needed in the market. The laws of these countries which demand workings are usually met by a perfunctory process, which adds about $100 to the inventor's expenses every time such working is necessary. These additional expenses make it very difficult for a poor inventor in our country to get any profit whatever from foreign patents. Of course, we could retaliate on foreign inventors by making our system more expensive to them; but it is questionable as to whether we should change our system, which has produced such magnificent results, in order to punish those of other countries who are using an inferior system.

Artificial Dyestuffs.

Because of the proposed change in the English patent law, making the validity of a patent depend on its being worked in England, one of the leading artificial dyestuff companies in Germany contemplates establishing a manufacturing plant in England. This announcement appears in a recent issue of the "Leipziger Monatschrift fuer Textil-Industrie," along with a number of the annual reports of these corporations.

Under existing law the German manufacturer obtains a patent in England, which prevents anyone else from producing the article on British territory. The German law provides that a patent may be cancelled if the patented article is not manufactured in Germany within three years. Thus both the English and the German statutes have been calculated to promote the manufacture of patented goods in Germany and prevent such manufacture in England.

Artificial dyestuffs, being the product chiefly of patented processes, supply a striking illustration of the effect of the patent laws in the two countries. The industry, established by an Englishman, Sir William H. Perkin, in 1856, has under the influence of the patent law languished in the country of its birth and grown to vast proportions in Germany. Seldom has the efficiency of protection in regulating the development of industry been more convincingly illustrated than in this case, and now additional evidence of this efficiency is supplied by the speed with which the German dyestuff manufacturers, at the mere prospect of a change of the English law, propose to establish works in England. Moreover, the effect of patent protection is further emphasized by the statement in the report of the same corporation that the Moscow works must be greatly enlarged to provide for the Russian market, because "the Russian tariff is so high as to prohibit imports of artificial dyestuffs from Germany," while the Russian patent law requires that a patent must be worked in Russia.

Second in interest only to that part of the report relating to the effect of foreign tariff and patent laws, are the financial reports of the four companies for the past year, which, as summarized from the "Leipziger Monatsscrift," are as follows:

	Marks.	% on Capital.
Capital	76,000,500	
Manuf'g profit	52,348,705	68½%
Charges against profits	16,321,537	
Net profit for year	36,027,168	47%
Undivided profits	3,035,450	4%
Profits for distribution	39,062,618	51%

The net profits of 47 per cent. for the year just ended and the 4 per cent. available from profits of previous years, making 51 per cent. in all, were distributed as follows:

	Marks.	% on Capital
Dividends to stockholders	23,490,000	30.7%
Profit sharing	1,999,887	2.6%
Miscellaneous	3,765,209	4.9%
Added to reserve	6,453,435	8.4%
Carried forward	3,354,087	4.4%
		51. %

The reports refer to various influences affecting the industry, such as the increase in the cost of labor and material, the scarcity of skilled help and growing competition. Nevertheless all agree that the prospects are bright for a continuance of the present prosperity.

Although the control and much the larger part of the works are located in Germany, still the manufacture of artificial dyestuffs is a world industry, which is managed to conform to world-wide conditions. It has no fixed residence, but settles in Russia, Austria, France, England and America as readily as in Germany, the only object being to conform to existing conditions, either natural or political, so as to obtain the lowest cost of production and the highest price for the finished product.

The Vienna Cotton Congress.

A noteworthy feature of the recent Cotton Congress at Vienna was the presence of a number of representatives from the South, who journeyed across the Atlantic to Vienna that they might have an opportunity to discuss with European manufacturers the various questions agitating the cotton trade.

The Neue Freie Presse of Vienna reports the following Americans in attendance: C. B. Barrett, president of the Farmers' Union; E. T. Charles, Walter Clark, Samuel Clough, I. M. Johnson, Harvie Jordan, president of the Southern Cotton Association; David Lubin, Daniel C. Roper, Donald Rose and A. S. Terrill.

While the reports of the proceedings at Vienna are necessarily meager, because of the distance and the secretive policy still followed by the managers of these affairs, there was evidence that this secrecy is being relaxed somewhat, bringing the meetings of the European Federation nearer to the wide-open cotton meetings in America. Every association, no matter how public its objects, has certain business to transact which does not concern the public and which can be attended to much better in executive session. But for a congress of cotton spinners to meet behind closed doors and dole out meager daily reports of the transactions after the manner of a conference of colonial premiers or of diplomats deciding the question of peace or war between nations, is not only to make the cotton congress ridiculous, but to prevent the accomplishment of one of its most important objects—bringing the spinners and planters into more harmonious working relations. The evidence that this policy of secrecy has been relaxed is seen not only in the presence of the planter's representatives at Vienna, but in the frank statement by E. Travis, chairman of the Organization Committee, regarding the main object of the Federation.

In 1904 during the cotton shortage, when the mills of Lancashire and the Continent were on short time, the first Congress was held at Zurich and the International Federation organized so that the spinners of Europe could act more as a unit in applying the remedy of short time to any future shortage. Last month at the fourth Congress at Vienna Mr. Travis referred as follows to this, the primary object of the Federation:

> My only other point is the short-time movement of 1904. That movement has been a pronounced success. I am afraid to make any estimate of the amount of money that movement has made for Lancashire spinners in particular, cotton spinners in general, and in fact for the world at large. We now possess, through that success, the ability to apply the same remedy again, and apply it much more drastically and quickly, for I am firmly convinced that its success has proved an object-lesson to the whole trade, and that active objectors and lukewarm waverers will be a much smaller minority should a similar remedy be again required. I am sure I voice the opinions of all here when I express the hope that there may be no cause for the necessity of again putting that remedy in force, but that by the successful action of the various cotton-growing associations in diversifying and increasing the areas of cotton supply such a scarcity of raw material as was experienced in 1904 may not recur.

This organizing of the European spinners to bring about short time when the scarcity and high price of cotton may make the running of their mills unprofitable, is a plain, everyday, business proposition, perfectly proper and recognized as such by all interests from the grower of cotton to the consumer of cotton goods. The mystery is why anyone could imagine it either possible or advisable to keep that object secret.

Short time is the certain means by which the spinners can restore a margin of profit when lost by a shortage of raw material. Short time checks the consumption of cotton and the supply of cotton goods. It thus depresses the price of raw material and raises the price of manufactured goods, making it possible to operate the mills at a profit.

At Vienna Mr. Travis referred to this point as follows:

> Like an army, a navy, or even like the fire brigades at our own mills, our organization must be kept ready for instant action whatever emergency may arise. . . . I maintain we have as much right to a reasonable return on our capital as a workman has to his wages. I maintain that by good organization, without attempting to exploit either the customers who buy our goods or the workpeople who make them, we have no necessity in the future, as we have so often done in the past, to work our mills for long periods of time for no return at all; but by concerted action to ensure to a reasonably managed and equipped mill a reasonable profit in a very few months.

In other words, the cotton spinners and manufacturers of Europe propose to go on strike when the buyers will not pay for cotton goods a price that will give the mills a living profit. No sound objection to short time under such conditions can be raised. Organizing for such a purpose is the proper course for mill owners possessing interests sufficiently in common. Whether or not the spinners of the different countries of Europe have enough in common to make such organization effective, it is certain that such community of interests does not exist between them and the spinners of the United States. American spinners may some day find it necessary to adopt organized short time to prevent losses from manufacturing high priced cotton into low priced goods, but the common interests of the cotton growing and manufacturing industries in the United States make it impossible for the American spinner ever to join with the foreign spinner in carrying out a short time policy, which is, nevertheless, perfectly proper for each to pursue independently.

Fortunately this diversity of interests is now generally recognized in Europe as well as America. This leaves spinners at home and abroad free to co-operate in the many important lines of work in the cotton trade. That they propose to do so is shown by the following extract from an interview with C. W. Macara, president of the European Federation, after his return from the Vienna Congress:

> In the free and friendly intercourse that has taken place at Vienna admissions have been made by the planters, followed by promises from which much may be expected. The planters' presidents acknowledge that the cotton does not come to Europe in the condition in which it should come, and they ask the European spinners to help them in their endeavor to overcome the difficulties inseparable from the picking and marketing of so huge a crop as 13,000,000 bales in the short space of 120 days. Among their other difficulties are included the handicaps imposed by the various trusts which control the bagging, the binding and the compressing of the cotton. These trusts, tending to become monopolies, crush life and vigor out of the industry, and they cannot be successfully opposed unless the American planters meet with energetic support from their customers, the spinners of the world. From the spirit prevailing throughout the Vienna Congress it was obvious that this support they will have to the fullest extent.
>
> I am disclosing no secret when I say that in the autumn of this year a party of European spinners, probably numbering between 50 and 100, intend to make a tour of the Southern States of America for the purpose of cementing the closer relationships that are springing up between them and the cotton growers, and they will attend the Spinners' and Planters' Convention in Alabama in October next, when they will have the advantage of conferring not only with the planters but with the spinners and manufacturers of America.
>
> In this way the international movement in the cotton trade is spreading on natural lines in exactly the way that we desire. We are beginning to realize more and more that the grower, the spinner and the manufacturer are engaged in one common industry, that they are mutually interdependent, and that they should help one another.

Reform in the ginning and baling of American cotton, greater economy in marketing the staple, establishing a standard of moisture for raw cotton, eliminating the evils of speculation, these are the problems in the solution of which the planters and manufacturers of all countries can unite, and, we feel sure, will unite.

Increase of Wages in Lancashire.

Beginning with the third pay day in June the 150,000 operatives in the spinning mills of Lancashire will receive an increase of 5 per cent. in their wages. These mills represent 50,000,000 spindles, and it is estimated that this increase in wages will amount to over $2,000,000 per year. It was clearly understood that a refusal to grant the advance would have resulted in an immediate strike. The employers have been making handsome profits, and this is what strengthened the operatives in their demand. The mill owners claimed that present conditions do not warrant the advance, but they yielded rather than suffer the far greater loss that would follow the closing of their mills.

The Price of Sewing Thread.

Last month the retail price of the ordinary grades of sewing cotton was raised 20 per cent., from 5 to 6 cents a spool, by the leading manufacturers of spool cotton. The reason assigned for this action was the recent rapid increase in the cost of the raw material, labor and supplies used in manufacturing. This advance in the retail price of a commodity so generally used as cotton thread was immediately followed by a great outcry in the daily press in all sections of the country against the oppressive methods of the thread trust, and doubtless this clamor reflected the sentiment of the millions of women who have occasion to buy thread for daily use. The printed comments on the action of the thread combine have been especially sharp in the free trade papers. Here for example is an editorial from the "Philadelphia Record":

> **Home Thrust.**
>
> The attention of "The Record's" women readers (there is a host of them) is especially directed to the sudden advance in the price of thread. The Thread Trust has boosted prices 11 cents per dozen. As the cold weather and consequent prospect of poor crops have put up the price of vegetables and bread stuffs, and as meats are also advancing, the Thread Trust proposes to keep step with the procession. In order that there may be no escape for the thread users—either those who are not greatly incommoded by a small exaction or those more unfortunate sisters who
>
> Stitch, stitch, stitch,
> In poverty, hunger and dirt—
>
> our paternal Government imposes a tariff duty to protect the Trust and encourage it in its plundering.
>
> The women do not enact our tariff laws, which serve to build up monopolies at the expense of the humblest and most helpless bread-winners, but they do bring into the world the "stand-patters" who insist that such baleful laws shall be kept unrepealed. They should deal with these hard-hearted and implacable Trust builders, according to their desert, in the places where they live and get bed and board.

The "Record's" object is plain. It is not to determine the truth and state it for the guidance of its readers. There is not in its tirade the slightest attempt to consider any possible justification for the increase of price. The sole object is to stir up discontent with the tariff among the millions of retail buyers of thread. We are not attempting to defend the thread combine, but the press comments have been so plainly unfair and prompted by a desire to gain a partisan advantage irrespective of the facts that we have been led to make some independent investigation of the question. We accordingly bought nine spools of thread of different numbers, and then carefully measured and weighed the thread on each spool. The length on each varied from 195 1/2 to 201 1/2 yards, the total for the nine spools being 1,780 1/4 yards. The difference, 19 1/4 yards, in 1,800, might easily be due to an unavoidable variation in tension and so we can conclude that the indicated lengths were correct. The weights were as follows:

Thread.	Net weight.	Cotton Count.
8 white	313.4 grains	6/32
30 black	181.5 grains	6/55
36 black	164.4 grains	6/61
40 black	144.1 grains	6/69
50 white	103.8 grains	6/96
60 white	96.1 grains	6/104
70 white	85.1 grains	6/118
110 white	57.9 grains	3/86
200 white	32.1 grains	3/156

Calculating from these weights the price per pound at 5 and 6 cents per spool, we get the following results:

Thread.	Old price.	New price.	Increase.
8 white	$1.12	$1.34	$ .22
30 black	1.93	2.31	.38
36 black	2.13	2.56	.43
40 black	2.43	2.92	.49
50 white	3.37	4.05	.68
60 white	3.64	4.37	.73
70 white	4.11	4.94	.83
110 white	6.04	7.25	1.21
200 white	10.90	13.08	2.18

In other words, the consumer is called

upon to pay an advance varying from 22 cents to $2.18 a pound on these nine grades of thread, the average being 79 1/2 cents. This may or may not be justified by the increase in the cost of production, but those who are responsible for the advance rest under an obligation to give the public some explanation of their action. Under any circumstance such an explanation should be made. The obligation is especially heavy now when withholding it may injure the cause of protection to American industries. Those of us whose recollection extends back to 1890 will recall how effectively public sentiment is created by some catch phrase indicating that the consumer is being robbed by the tariff. Then it was the McKinley tariff on tin plate, and the tax laid on the poor man's dinner pail by the imagination of free traders seemed so real to the workmen of the country that they elected Cleveland president and soon many of them had no need of dinner pails, for under a low tariff they could find no work and had no money with which to buy a dinner.

That cry over "the poor man's dinner pail" did then what the cry over "the poor woman's spool of thread" promises to do now. We know that the complaint then was unfounded? Is it now? The thread manufacturers should turn on the light. They should explain why an average increase of 80 cents a pound is necessary on cotton thread. If they can they should demonstrate to the American public that this advance goes, not to swell the profits of the thread manufacturers, but to cover the advance paid to the cotton planter and the thread mill operative. The fact that the advance is made by manufacturing companies that are but branches of a foreign corporation, may lessen their personal interest in preventing unfair attacks on the Dingley tariff, but this can only stimulate the efforts of all other manufacturers to have the facts made public.

The first authentic date for the establishment of a textile school is 1810, when a beginning was made by giving instruction in cotton spinning in the Conservatory of Arts and Trades in Paris.

The Embarrassment of Riches.

The recent annual meeting and financial report of the Fine Cotton Spinners' and Doublers' Association at Manchester, England, illustrate the most serious difficulty confronting English spinners in general, namely, the disposal of their profits. This Association would be called a trust in the United States. It is, in fact, a combination, formed in 1898, of sixty mills spinning fine cotton yarns, and including in the number some of the largest and best spinners of cotton yarn in the world. The Association is so organized as to preserve the individuality of the members and yet secure the advantages of combination under one central management. One of its members, McConnel & Co., recently published a history of their own firm founded in 1798, and referred with as much pride to the excellence of their product and the efficiency of their mills as if they were still independent of the Association, and they referred to that organization in the following terms:

"Under the new conditions the development of the firm has been even more rapid than before. The separate identity of the firm has been carefully retained, and the business is still carried on in all important matters on the responsibility and under the direction of John W. McConnell. The firm McConnell & Co. now (1906) control 400,000 spindles, and can offer to their customers in single or in two-fold, in cop or spools or bundles, any quantity required, over a range of counts from 40s to 300s, or finer if desired."

This is from the history of but one member of the Association. The following is an extract from the report of the recent annual meeting of the general company, as given in the "Guardian," and shows the results obtained by this English cotton trust in the present period of unprecedented prosperity in the cotton trade.

SMALLEST STOCK OF YARN ON RECORD.

Sir W. H. Holland, M. P., one of the vice-chairmen, said he was glad that they were in a position to congratulate themselves on the very satisfactory report and statement of accounts it was the privilege of the directors to present. Tested by every standard the past year, in the history of the Association, had surpassed all its predecessors. During that year the profits had been the largest, the production had been the largest, and the sales the largest in their history, and the only single respect in which, instead of being

the largest, the figures were the smallest was in relation to stocks of yarn on hand to March 31.—(Hear, hear.) Happily the stock was the very smallest in the history of their Association. The boom in the cotton trade, which commenced now a few years ago, was certainly somewhat slow in reaching their branch of the trade—which was the finest branch, the production of the finest yarns,—but they might hope that their innings, at any rate, had come at last, and that that innings was still being continued. Before it was over they hoped, in cricket parlance, to compile a very substantial score.—(Hear, hear.)

LARGEST PROFITS ON RECORD.

Coming to the balance-sheet, he said their gross trading profit for the last year reached the record figure of £828,320, and after deducting depreciation and bank interest there remained a net trading profit of £683,836. That was an increase of £281,000 over the net profit of the previous year, which in its turn was an increase of £161,000 on the net profit of the year before. The previous record net profit in the history of the Association was in the year 1901, when it amounted to £493,000, so that during the past year they had beaten their previous record by no less a sum than £190,000. Of course the Association today was substantially bigger than it was in 1901, but he was glad to say that the profits had grown in even larger proportion than had the Association,—(Applause.)

Referring to other figures in the balance-sheet, the Chairman said the yield on their investments in subsidiary companies was fully as good as the yield on the investments in the parent Association, and they had every reason to believe that that yield would improve as time went on. All their subsidiary concerns were in a highly satisfactory condition and from a dividend-yielding point of view were a source of strength rather than of weakness to the Association. Their stock of yarn was so low that, in the directors' judgment, there was no room for any further reduction under that head. To those who knew anything of the trade that would be a very satisfactory feature indeed, and reflected great credit upon their salesmen.—(Hear, hear.)

LARGE STOCK OF RAW COTTON ON HAND.

Their stock of raw cotton, on the other hand, was larger than it was a year ago. That in turn was only right and proper, because their commitments in sales of yarn were larger, and it was only fitting that their stock of cotton to cover those sales should be similarly increased.—(Hear, hear.)

THE PROFITS FOR DISPOSAL.

The net profit amounted to £683,836, but that had to have some substantial deductions made from it. When these had been made there was a net residue of £466,843 for disposal. That balance had been the subject of very anxious deliberation on the part of the Board, and they now recommended that it should be disposed of in the following manner:—First that a sum of £150,000 should be transferred to the reserve fund. That compared with a transfer last year of £40,000. It was then proposed that there should be paid a second half year's dividend at the rate of 5 per cent. per annum on the preference shares, which would absorb £62,500, and a second half year's dividend on the ordinary shares at the rate of 10 per cent., or 5 per cent. for the six months. That would absorb £100,000. It was also proposed that a bonus of 2 per cent. should be declared on the ordinary shares, making a total distribution for the twelve months of 10 per cent. on that class of shares. A further £40,000 would thus be absorbed, and there was left a sum of £114,343, which it was proposed to carry forward and add to the available resources at the disposal of the Association.

BRIGHT PROSPECTS.

As to the prospects, there was no sign, happily, of any falling off in prosperity.—(Applause.) Their margins were fully maintained, their order-book was amply supplied, and they were adequately covered with their raw material. While their present position was highly satisfactory, they could not shut their eyes to the fact that there were a good many mills being built in the neighborhood. If the building of new mills was continued long enough, he thought it pretty clear that eventually supply must overtake demand and they must have a period of over-production of some classes of yarn at any rate. He believed that over-production would be mainly in the coarser numbers, their own specialty being the production of the finest counts.

COMPETITION OF NEW MILLS.

Mr. H. Christie, in seconding the motion, said he wished to emphasize the statement of Sir William Holland as to the importance and necessity of husbanding their resources. They had had a fat year, and in all probability they were going to have another fat year, and let them hope more than one. But as certain as they were there those years must be followed, some time or other, by a lean year, and it was absolutely necessary for the welfare of their concern not only to keep up the equipment of their concerns but also to ensure that on the average a fair dividend should be paid, that they should take care to husband their resources. It did not signify whether it was to be added to their reserve fund or their depreciation fund, or by a large carry-over. They wanted liquid resources, so that they might be able to lay them out at all times when the emergency arose. They owned the best businesses and the most modern and the largest fine spinning concerns in the world. Some people had said they were unable to compete with the large new mills that Sir William Holland had mentioned, and that they had seen in the last year or two being erected around them. He had no hesitation in saying that, owing to the large sums that had been spent in the past on the concerns of that Association, they were able to compete with any of the magnificent new mills that were being built, and that they had certain advantages over those new concerns. They intended that they should be well equipped, and for that reason he could hardly think any shareholder would object to their putting by the sum they had done, and that they would not think it would have been prudent to have paid a larger dividend, which would of course have been possible. The directors, however, wanted to come before the shareholders year after year and pay a respectable dividend, so that

the ordinary shares of the Fine Cotton Spinners and Doublers' Association might be looked upon as an investment upon which they could always depend for a good return.

The resolution was passed and the dividends, as proposed in the report, declared.

Mill Operatives via Canada.

The following news item from the "Textile Mercury" is of interest to manufacturers not only in Canada, but in the United States as well.

On June 14th about 130 men, women and children will leave Liverpool on the S. S. "Empress Britain" for Montreal, Canada, to take up positions under the Dominion Textile Company. The children are of course merely going out with their parents—not to start work in the mills. The members of the party have been gathered mainly from North-East Lancashire, and they are mostly weavers. They have been organized for their emigration by Mr. T. E. Reade, a representative of the Dominion Textile Company, who has himself been a Lancashire mill-worker. The fares of the emigrants are being defrayed by the company, on condition that the money is returned when they are in receipt of full wages.

For all practical purposes a migration of operatives to Canadian mills has as much effect in supplying the labor shortage in the United States as in Canada. The proximity of Canada and the United States and the similarity of conditions in the two countries result in an equalization of supply and demand. It is a practical impossibility for one of these adjoining countries to have a surplus of help while the other is suffering from a scarcity. Consequently a supply to one is a supply to both. In this, as in many other respects, the two countries are practically one. Once landed in Canada the newcomers from Europe will exert an influence toward further emigration to the United States. They may not come here themselves, but their addition to the Canadian working population will cause others to trek to the "States."

A Canadian manufacturer recently complained of this tendency, and mentioned his own experience, which illustrates the general situation. He had recently brought from England "a fine family of seven workers," as he termed it. They had settled down apparently contented with their new home, when suddenly they gave their notice and left his mill to go to work in Lowell, Mass., where some friends had settled. The U. S. alien labor law counts for little against immigration from Canada. The assistance of friends in the "States," or as a last resort, a "visit" across the border, brings the Canadian operative and the employer in the "States" together. The assisted and unassisted immigration of English mill operatives to Canada, while it may not assume large proportions, yet promises to be a constant factor in supplying the labor shortage in the United States.

Cotton Fabrics for India.

In a previous issue we published a description of dhooties, of which vast quantities are woven in Lancashire and exported to India. It is a trade that seems to be successfully controlled by English mills and their many years' experience in making these goods has brought the cost of production to a point where it would be very difficult for American manufacturers to compete successfully. A member of a large Bombay importing house who was in this country in January seemed to think it would be most difficult for American mills to capture any portion of this trade from the fact that they are not made from stock, but almost entirely made to the merchant's order and American mills, says this Indian merchant, do not wish to transact business directly with the buyers, but only through the shippers.

He calls attention to the long time it takes to create a demand for any recognized line of fabrics and the difficulty of selling goods that are not known by a trade brand. Although there is a vast field for grey drills in Bombay and other markets in 29 by 49-yard pieces, the Pepperell drills with the Dragon brand are about the only American cottons that are extensively sold in Indian markets. He states that American manufacturers must not expect to get prices at the beginning on a parity with such well known brands, but should distribute samples with merchants in different parts of the country which should be sold even at some sacrifice to create a demand. After the demand is created the prices can be advanced. Many responsible Indian merchants will undertake representation in India on the basis of sole agency, goods to be consigned, and 75 per cent. of the invoice value advanced.

The Cotton Exchange Problem.

BY S. J. CHAPMAN, M. A., M. Com.

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I am too far away from the field of action and too little acquainted with the inner workings of the New York Exchange—in spite of the numerous printed reports that have come to my hands—to enter with any profit into the practical minutiae of the controversy now raging, but in it certain general principles are involved and these perhaps I may fruitfully discuss after the years of study which I have given as a theorist to the problems of the cotton industry and trade.

GENERALITY AND NATURE OF THE PROBLEM.

We on this side of the Atlantic are not altogether untouched by the existing agitation. The contest over specific points connected with the working of the New York Exchange is only a skirmish in a disturbance which is very far extended, as witness the views expressed at recent International Congresses of Spinners. The problem resolves itself into a general one relating to "fictitious dealings" in cotton, and a particular one relating to the arrangements whereby facilities are efforded for purchasing cotton for future delivery and for speculating in price movements. To make any contribution to the controversy quite clear I shall start with the very foundations of "future" dealing.

THE SPINNER'S RISKS AS A BUYER AND THE NEED OF MARKET SPECIALISTS.

Suppose no future market exists and consider then the position of the spinner. He is offered, let us imagine, an order for delivery of yarn at stated intervals at a fixed price. Three courses are open to him: 1, to buy all the raw material that he wants at once; 2, to buy it as he wants it; 3, to buy at what he thinks to be the most favorable time.

Now to every one of these courses there are grave objections. In the first case the whole community may suffer, for such a course involves large purchases of cotton to be stored till needed when supplies are short (say, at the end of the season) and prices are high. Thus prices would be made to vary enormously; for not only would they be raised by unnecessarily large purchases being effected when supplies were short, but they would also be unduly depressed when new supplies came in because part of the demand which ought to have absorbed them would be used up.

If the spinner pursues the second course he takes a heavy risk connected with fluctuations in the price of his raw material which may exhaust his profit; and if he falls back on the third course he becomes a speculator and may be one without adequate knowledge. Were there no "future" market, spinners would be driven by force of circumstances into taking risks connected with movements in the price of raw material, and we should all suffer because men designed by nature to be capable spinners might thereby be forced out of the industry merely through their misfortunes in acquiring raw material. That division of labor, specialization of function, the differentiation of the economic organism, call it what we may, is on the whole to the good in the long run, should need no proof more than a century after the publication of "The Wealth of Nations." It is highly desirable, therefore, that these market risks should be borne by specialists who devote their whole time to studying, as a whole, the demand for cotton and its supplies in relation to each other.*

SOME REQUISITES OF THE DEVELOPED MARKET OF WHICH THE STOCK EXCHANGE IS A TYPE.

For the appearance of such specialists and to secure that frequent and rapid dealing shall take place among them according as their judgments and market conditions vary

——*A more detailed analysis of market risks and of the conditions determining the emergence of market specialists and their functions will be found in Chapter seven of my work on "The Lancashire Cotton Industry."

in relation to one another, it is essential that the risks should become definite and tangible, be classified and be reduced to units. In all kinds of "futures," "puts," "calls," "double options," "straddles," whatever they may be, we have these risks or a part of them, crystallized in a few simple forms, so to speak, so that they may be readily salable and in convenient quantities.

THE CONDITIONS OF "DEVELOPED" DEALING MUST BE CREATED ARTIFICIALLY.

In the crystallizing process a certain violence is done to the facts. The varieties of cotton are infinite: they must be made finite; that is, cotton must be graded. It is important that this should be realized; the question is, What is the most appropriate form for the violence to take? If stock exchange methods are to be introduced among the processes of dealing in produce the unit of each deal must be rendered as much like a share as possible. When we buy a share we know what we are buying and every share of a class is just like every other share of the same class. Now this ideal is not fully attainable in the cotton market. We never know exactly what we are buying. We purchase a certain grade; cotton is delivered against it, and nature does not produce cotton in a limited number of grades. The delivered cotton must therefore be classified by fallible human beings, and these same fallible human beings must determine not only the grade to which it most closely approximates, but also allowances or discounts to be paid for its degree of departure from the form of the grade.

DIFFERENCES OF PRACTICE IN SETTLING RELATIVE PRICES OF GRADES.

Now we are getting into close touch with some of the details of the present controversy. The practices of exchanges differ in the matter of the fixation of prices of the grades and the course taken in classifying and fixing allowances or discounts. These differences may be due partly to the diversity of conditions under which the several exchanges exist. So to speak, cotton naturally streams through the markets of New Orleans, Liverpool, Bremen and Havre. But cotton does not naturally flow through the New York Exchange and in spite of Mr. Price's forecast I doubt whether it ever will.

Let us look carefully into this problem of the fixation of the prices of the grades in relation to the price of that quality of cotton which is the basis of the future contract. It is obvious that business is facilitated by being kept simple, if only one class of "future" is circulated, or if the number of classes is strictly limited. For with only one class in use some ten "futures," corresponding to the ten months ahead, generally speaking, are in use. Hence no exchange has yet tried "Good Ordinary Futures," "Low Middling Futures," "Good Middling Futures," and so forth. It is argued that business would thereby be confused. Ordinarily a committee determines the "points on or off," the price of the one class of futures to be charged for the different grades, taking the state of the market as their guide. But here again uncertainty creeps into the cover afforded by the "future." These "points on or off" are seldom stationary: how could they be in the variable world of commerce? The New York Exchange gets over the uncertainty by fixing the relations between the prices of the several grades for some months ahead. This looks a daring device and a doubtful one. We shall see later what is involved in it.

RISKS OF SEVERAL AND RISKS OF SPECIAL PRICE MOVEMENTS.

Now it should be perfectly plain at this point that two classes of risks are involved in relation to the provision of cotton for spinners. On the one hand there are the several movements of cotton prices; on the other, relative movements of the particular grade which a spinner wants. This is quite clearly realized in Lancashire and much has been talked about insurance against the "points on." Some even advocate the inclusion of the special risks attaching to future needs for each grade of cotton in the future contract by the establishment of distinct "futures" for each grade; but dealers seem to hold as a rule that the complexity of working involved would be too great. I am not in a position to come to a decision. I

can only state the problem, which can be solved only by the careful and unimpassioned deliberations of all classes of interested and instructed parties. What we seem to be coming to here is an insurance of the spinner by his broker against all risks, followed by the hedging of the latter against several price movements by dealings in "futures" on the Exchange. The most cautious spinners, it is said, will not touch "futures" because they know them to be defective as a cover. If they dabble in futures it is as speculators.

THE NEW YORK SYSTEM.

New York has tried to escape the uncertainties connected with frequent declarations by a fallible committee of the relations between the prices of the several grades of cotton and the price of that grade which is the basis of the future contract, by having these relations fixed definitely for some time. This means that the cheapest grade of cotton in relation to these prices and the state of the market tends to be delivered against New York futures. Every dealer who insists on delivery knows what grade to expect, because he is conversant with the actual market conditions, but an outsider would not. The system, it need hardly be said, may throw New York futures out of relation with the futures in other cotton markets, as the former for some time may get on to the basis of a grade the price of which is exceptional, and the inexpert may in consequence be misled. And of course it throws the New York future contract still further out of relation with real deliveries. But does this matter much? Delivery seems to be getting more and more like the convertibility of the bank note. The latter is seldom actually wanted, but it must be provided for in order to preserve the value of the note. It seems to be sufficient if the conversion of the note into gold can be demanded though actually it never may be. So, in order to secure the volume and kind of dealings which, under certain conditions (for which see below) will spread demand and supply in reference to one another with the result that the course of prices is smoothed, it appears to be necessary only that delivery can be demanded though actually it never may be. Again, on this matter of suitability for all parties of the New York system, in view of the circumstances of the New York Exchange, I can only conclude that the matter is one for serious consideration.

THE PRESENT SEMI-PUBLIC CHARACTER OF PRODUCE EXCHANGES.

And this suggests a point which perhaps is somewhat outside my objective here; that is, the semi-public character of the produce exchanges. Their history has been somewhat like the history of the Bank of England. They began merely as private clubs, but their influence for good or ill on society is now too great for them to be regarded merely as private clubs. This I think will be as generally admitted as the statement that the Bank of England, though originally and still in form a private bank and not a state bank, is a public institution with well-understood public obligations which it is reasonably expected to meet.

EFFECT OF SPECULATION BY "FUTURES" ON PRICES.

Most of the discussion today of detailed points relating to "futures" is colored by views of the effects of speculation. This question, then, we cannot wholly dismiss, though our consideration of it must be brief. Now there can be no doubt that the sort of speculation which consists in anticipation by the expert, which is inferential from experience and known facts and which takes place because of prices and not with the object of affecting prices, must benefit the community by smoothing prices. From the plenty of one time produce—held over against the scarcity of another time and times of over depression—are discounted against times of over-sanguine demand. We may reasonably suppose that trained experts who have enjoyed lengthy experience and possess trustworthy information will prove more frequently right than wrong in their anticipations and will therefore cause a subsidence of price disturbances.

THE FLAW IN THE DEDUCTIVE ARGUMENT.

It does not follow, however, that the system of organized produce exchanges has

been beneficial. Dealings by experts have been facilitated, it is true, but "cornering" has been rendered easier also, and in general action intended to create false impressions and thereby influence prices, which might be termed tampering with the market. Again the inexpert public gets drawn in, and inasmuch as the public is influenced to a large extent as a crowd, and further may be seriously misled by the tampering of experts with the market, their speculation may quite easily cause more disturbances in prices. The law of error is frequently inapplicable to the action of crowds. Hence on a priori grounds the question of the effect of speculation upon prices cannot be settled.

HAVE PRICES BEEN GETTING STEADIER?

There remains the witness of fact. Have prices been getting steadier or unsteadier? we may ask, and what may be inferred from any changes that have taken place? First, have the prices of cotton been getting steadier? Last year, in collaboration with another investigator, I took the trouble to calculate indices of steadiness of prices in the Liverpool cotton market for the last fifty years. The results were published in the Journal of the Royal Statistical Society (Vol. LXIX). I need not describe the various indices of price steadiness used and attempt to justify their use. Those I selected were: (1) The range of price movement in the year, (2) the mean of the weekly movements of the year, and (3) the standard deviation for the year. The "standard deviation" is a mathematical measure of unsteadiness wherein account is taken both of the extent and the frequency of the movement. Frequency of movement we did not take separately, because inconsiderable variations by very frequent small movements are obviously preferable to a more limited number of sudden jumps and dips.

Now it may be regarded as quite beyond dispute that prices have been getting steadier if all these indices have been falling, and unsteadier in the reverse case. We found that, generally speaking, all the indices had been falling from 1868 (the first year considered by us) to about 1890, but that thereafter a general rise was apparent. Price steadiness, it might with reason be argued, ought to be represented in relation to the general level of prices, and when the indices of price unsteadiness are so expressed, that is, as percentages of the average price of the year, their upward sweep since about the beginning of the last decade of the nineteenth century is still unmistakable. Our calculated indices of unsteadiness so represented are shown in the diagram which is extracted from the paper referred to. I am not aware of any peculiar feature in the demand of spinners or in supplies of late years which would account for these results. It should be observed here that "crop" years, not calendar years, were used in our investigations, August and September being omitted because sometimes they were months of abnormal conditions in consequence of the retardation of the crop—that is, each year was taken as running from the beginning of October to the end of July.

WHAT DOES RECENT UNSTEADINESS OF PRICES PROVE?

What can be concluded from these movements of the indices of price unsteadiness? The answer to the question depends on the answer to another; namely, has any significant change taken place in marketing conditions or methods in the last twenty years? It is said that the only noticeable alteration consists in the larger operations of dealing syndicates on the market and in the greater part now played by the gambling outside public. To the latter feature I think the less importance is to be attached. But there can be no doubt, it is affirmed, as to the extensive operations of syndicates (financial combinations to deal) and it is alleged that they act so as to influence prices—as I have phrased it, "tamper with the market,"—instead of merely buying or selling according as the level of prices deflects from their anticipations of future prices. We know that powerful interests by tampering with the market would unsteady prices; it is persistently alleged that this influence on the market has grown; and prices have got unsteadier. It is therefore probable that the species of market operation described above is the cause of the undoubted decline in price

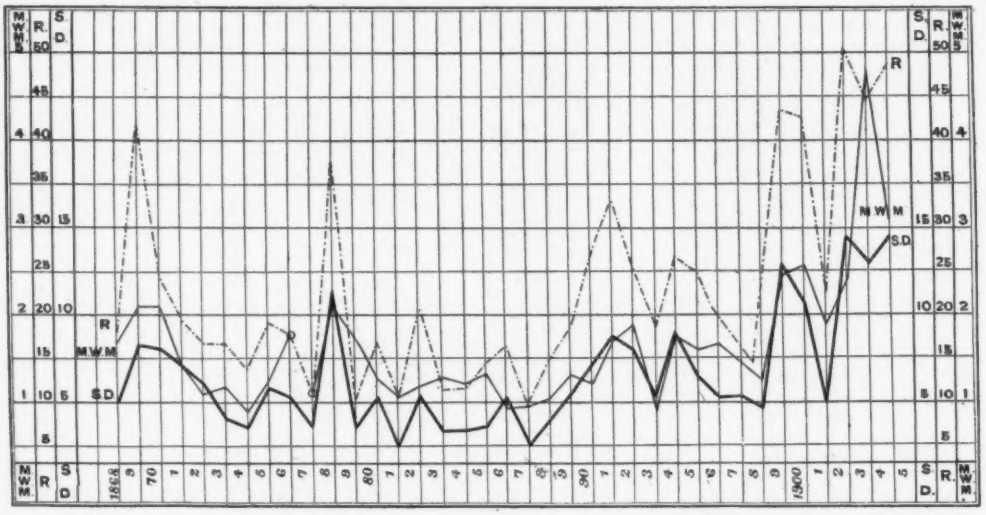
steadiness. "Probable," observe, but not certain, for concomitantly a volume of other commercial changes, each small in itself, has been witnessed and these may conceivably contribute to the explanation, though it is not easy to see how they can.

TWO OUTSTANDING CONSIDERATIONS AS REGARDS OPERATIONS IN EXCHANGES.

In connection with this result it is important to observe two points. The first is that an increase of the gambling spirit is not necessarily implied. "Financiering" is a business that is of comparatively recent appearance: the organization of industry and commerce has been succeeded of late years by the organization of financing. The phenomenon may be observed in other departments of business. It has got into the produce exchanges and there it has created a new situation which may call for some measure of public control. In short, we have here the trust invisible. The second noteworthy point is that if the practices on produce exchanges have of late been causing price disturbances, it is equally likely that the developed market system brought about that smoothing of prices which was evident up to about the close of the "nineties." Hence it does not follow that, if the organized produce exchanges with their "future" contracts were swept away, prices would rule steadier. On the contrary my observance of the facts historically leads me to the contrary opinion. They do good and harm, but the good, I feel no doubt in affirming, still predominates, though the harm appears to have been gaining way.

WHAT, IF ANYTHING, SHOULD BE DONE?

What is the practical conclusion? Reform, if possible, if the alleged tampering with the market is well founded, but not demolition. Let us be perfectly clear as to what we want to eradicate. It is first and most urgently dealing to influence prices with all its evil concomitants such as the promulgation of false reports—that is tampering with the market and all its associations. The effect of this is not appreciable—except for incorrect information—in so huge a market as that in raw cotton unless the dealing is backed by enormous resources. And we are aware that the organization of financing has made the gathering of resources for the purpose easier. How the purging can be effected I cannot say. Another but less urgent reform is to keep out the inexpert gambling public, but how this can be done without unintentionally crippling the market, unduly infringing the liberty of the subject and discouraging the enterprise to take risks—which it is to the interests of a progressive community to foster—I cannot yet see. The other matters relating to the form of the contract are small



compared with these, and sometimes when ostensibly the form of the contract is attacked, I think an assault on the whole system of future dealings is meant.

A TEXTILE CHEMIST'S EXPERIENCES IN THE UNITED STATES.

A young German chemist, named V. Samter, employed for a time in a large cotton mill and print works near Boston, has on his return to the Fatherland been telling his countrymen all about his experiences in America, and drawing comparisons between the two countries. His story, which appears in a recent issue of the "Zeitschrift fuer augewandte Chemie," is told with engaging frankness. To be sure, it reveals in almost every paragraph the youth and inexperience of the narrator, as well as a certain narrowness of vision, resulting possibly from his purely technical training, yet there are indications that the young man realizes these shortcomings and is endeavoring to overcome them. The story begins with an account of how he happened to come to America. About four years ago, when, having just finished his education, he was seeking a position by canvassing diligently among influential people in Berlin, he ran across an American holding an important position in a large electrical concern in this country. We will let the young man tell the story:

"The gentleman expressed himself as quite willing to try to find a position for me in America. He would, to use his own words, write to his friends in America: 'A chemist who makes a very good appearance seeks a position.' Meine Herren, I mention this not to extol myself, but because this brief remark is typically American and throws a bright light on certain conditions. Americans rely far more on the impression a person makes than we Germans do. It is not so important to have good testimonials—although naturally these are important in making a good impression—as to present a good personal appearance. Thanks to the efforts of my American a position was offered me near one of the largest cities in the Union. The position was that of analytical chemist and the salary very small. My need, however, was to acquire a footing, after which I could seek another position at my leisure. I accordingly accepted the position."

The young chemist then tells of his ocean voyage, the frequent attacks of seasickness and the keen regret he felt on such occasions that he had not made pharmaceutical chemistry a special study. He advises his friends by all means to travel first class instead of second on account of the better opportunities to make acquaintances, and then he tells of the approach to New York:

"Before we landed a number of officials boarded the steamer and subjected us to a most searching examination. On such occasions one should not mention that he is already engaged to fill a position. The so-called contract labor law forbids the making of contracts abroad for employment in the States, and those making such agreements are prohibited from landing. Young chemists come under this prohibition."

After a few days' sojourn in New York young Samter hastened to the mill near Boston and here is his account of his reception:

"On my arrival at the mill on a winter day I was conducted to a man in a straw hat and a fur coat who blossomed out as the director of the works. He showed me the place of my future activities, introduced me to my three immediate associates and the German overseer with whom I was to board until I should find a more suitable place. The overseer was one of those types that are found so often over there, having deserted Germany twenty years ago for America, married an American woman, etc. The German he spoke was horrible. He had, as he said, very little opportunity to speak English, and none at all to speak German. Such people, who are unable to express themselves in any language because they have forgotten their mother tongue and have not learned any new speech, are quite numerous over there. My overseer lived near the mill in a small but very attractive cottage, which might be called a villa. For board I had to pay $4.50 a week. For this I had a very attractive room and three unusually good meals. The conditions at once dispelled my previous fears that I would not be able to get along on my very modest salary. Living in America is not so expensive as is generally claimed by those who travel for pleasure and stop at expensive hotels. That a dollar has only as much purchasing power there as a mark (24 cents) has here is the veriest nonsense. I do not remember an instance where it was true. In comparing living conditions in the two countries the mistake is generally made of saying: This and that cost me so much in Germany, how much does it cost in America? One should say: It costs me so much to live in Germany in the German way, and so much when I live in America in the American way. I repeat that if a man will conform to American conditions he can live there at a low cost and in a very respectable way. To be sure certain things are very expensive; shaving, for example, costs at least 40 pfennige (10 cents), or even 60 pfennige (15 cents) in the best shops, but then a man can shave himself. I could give many such examples."

The day after his arrival the mill manager

asked the young German to sign a contract for a year and this he finally did, although somewhat unwillingly, as he feared it would prevent his bettering himself elsewhere. Fortune, however, did not desert him, for he says:

"One lucky thing soon happened; one of my associates died in three months and I was immediately promoted."

He next discusses the opportunities for chemists in the United States:

"It follows as a matter of course that special knowledge is of value. It is, however, not so essential to success as here in Germany. There are two reasons for this: First, the demand for chemists with special knowledge is not so great in America as here where one is hardly willing to engage a washwoman without calling on her for testimonials as to her years of experience in her special branch. In the second place the reason is found in the character and education of Americans who are trained to value the general intelligence and training of an employe. The American employer says to himself when engaging a chemist who is intelligent and has a good scientific education but no special knowledge of the industry in question: 'It will take a few months for the man to become accustomed to the business, but he will soon become as proficient as a chemist that has special training but who lacks the general knowledge that this man has.' This typical American view corresponds to the extraordinary variety of instruction in American technical schools. A morsel of everything is taught, the object being to lay a general although perhaps thorough foundation of knowledge and to neglect specializing. One good result of this variety of instruction is that no American chemist exhibits the dense ignorance of non-chemical matters that German chemists so often disclose. Every American chemist knows something about mechanical engineering, drafting, etc.; without this knowledge one is not able to fill the position of manager satisfactorily. With us the whole course of study is restricted in order to educate scientific chemists, people who intend to follow a scientific career in universities and technical schools or take up the work of solving special problems according to scientific principles in the laboratory of large manufacturing works. In America the object is to educate people who will be in a position to utilize the natural resources of the country, to exercise initiative when placed in responsible positions, to manufacture staple products according to prescribed methods, and to manage people and affairs successfully. The man for America is not so much the chemist as a technical chemist, a chemical engineer. Therefore those who intend to emigrate to America will do well to acquire a technical education."

Herr Samter then tells his German friends the various ways to find a position in America. He begins by reminding them that it is far more difficult to find a vacancy than to get appointed to it when it is once found. After discussing the various means, such as the aid of influential people, a personal canvass among the mills and recommendations from technical schools, he concludes that the latter is by far the best and recommends that before leaving Germany the emigrating chemists arm themselves with testimonials from German professors. He tempers the conceit of his countrymen in regard to the German position in the chemical world in the following words:

"I must not omit now to glance over the various branches of the chemical industry, inasmuch as we, under the overpowering influence of our dyestuff and pharmaceutical industries, often yield to the vain idea that we occupy the first place in applied chemistry or in all industries allied to chemistry. This is by no means true. We often find in the chemical industry products that are manufactured by well-known and thoroughly tested methods, or according to empirical formulas, or which do not necessitate scientific methods. These comprise the majority of chemical industries. I would be the last to deny the great importance of science in industry, but I have been thoroughly impressed with the fact that this importance is greatly exaggerated. How often it happens that the best processes are found by empirical methods, and that then the representative of science comes forward and proves that the best methods are actually the best. Aside from a few industries that can develop only by scientific methods, we find that applied chemistry in America is in a flourishing condition. That the other industries I have excepted are not prosperous in America is due to various circumstances: chiefly to lack of thoroughly educated chemists; next because of the great variety of products produced in small quantities by these industries; the high cost of labor eats up the profits; last but not least the American capitalist can invest his money more profitably in the production of staple products."

Herr Samter then discusses the social position of the chemist in America and he is forced to express his disgust at the manner in which the chemist is classed among workmen in the land of the free:

"The social position of the chemist and his standing in the mill organization are far lower than in Germany and I know of German chemists who by hard experience were finally convinced that the chemist is considered little better than a workman in the United States. A friend of mine was engaged in a looking-glass factory investigating new methods of silvering glass. He was made subordinate to the overseer, had to work the same hours as the workmen and also bear that mark of a workman, the receipt of his pay weekly. While my lot was much better in this respect yet I also had painful experiences; for example, in

our mill a very capable and intelligent man had become assistant superintendent. He had begun his career as a clerk in the office, then become a workman, next overseer, and then was appointed to the position of assistant superintendent with authority over the chemists. He possessed in an extraordinary degree the ability, so highly prized in America, to get as much out of the workmen as possible. This assistant naturally realized that he was the creature of the manager and showed little respect to those who, like us chemists, were working under him. This resulted in so much friction that I finally resigned my position.

"The high value placed in America on this capacity to get work out of people is a consequence of the high wages. It also follows that one who has been a workman is in a better position to judge what can be done than one who has not had the practical experience. Moreover, the labor supply is much poorer in America than with us. I refer now to day workmen and not to skilled labor. In the East many of the workmen cannot speak English, most of them being Italians. In recent years a large number of Russians and Germans from the Eastern provinces have gone to America. It follows that special ability is necessary to get the best results from such a heterogeneous collection of workmen and consequently the possessor of such ability is often rewarded with the positions in authority over the technical and scientific employes."

The narrator then speaks of the condition of the workman in America:

"In speaking of American conditions people generally assume that the workman there is much better off than elsewhere. This is true to a considerable extent, but there are exceptions. Wages vary in different parts of the country as well as the supply of and demand for labor. In the East day laborers are paid $1.25 to $1.50 a day of ten hours, mechanics and overseers from $2.50 to $4.00 and over. The relations between employer and employe are influenced by various factors. The democratic spirit, which is the priceless inheritance of the American nation, gives a man in a dependent position a feeling of freedom, while the improved industrial conditions give him a feeling of independence which is not possessed by his German brothers. This sentiment also results in a feeling on the part of the workman that his whole duty is discharged when he receives his pay. The system of protecting and caring for the workman is but slightly developed. There are many accidents in the mills and when a workman is injured his only recourse is to a law suit, which is generally so long and doubtful that the injured person in most cases consents to a very unsatisfactory compromise. The optimism which the American imbibes with his mother's milk closes his eyes to what is bad in American institutions. The patriarchal conditions which, thank God, we so often find here will be sought for in vain over there."

Thus closes Herr Samter's experiences on his first visit to America. We trust if he ever repeats his visit he will not fail to tell us all about it.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

Many additional lines of men's wear fabrics are gradually being shown to the numerous buyers now in the market, and the activity and interest is centered on these new productions.

Business is progressing in a steady and conservative manner; apparently there has been no great rush to secure any one particular line. There are few price advances in evidence, and little complaint is heard on this score, but a number of buyers express their dissatisfaction with the manipulation of certain standard fabrics. The fact appears to be that several numbers with which the buyer was well acquainted have been entirely withdrawn and others of similar nature substituted.

Clothiers generally have built their business on numbers which proved satisfactory to their trade, and would prefer to duplicate these lines, than commence over again and experiment on fabrics with which they are unacquainted.

One of the notable features thus far has been the decline in the call for the so-called mercerized worsteds. Another feature in evidence is the marked improvement in the call for woolens, and there is every reason to believe that as the season progresses woolens will gradually grow stronger, and the call more emphatic than it is at present.

Several of the agents claim that by the time the heavy-weight season is reached, woolens will again come to their own, and will be taken in equal quantities.

The styles and colorings in the new lines are generally considered to be very good. There are a number of new tans or fawns and brown combinations, but the bulk of the business is placed on staples such as black, blues and greys, with a few sample pieces

of the new modes, to see how they will take with the consumer. The following comprise some of the new lines opened during the month: Mackintosh, Taft & McKenney show complete lines with no change in prices from last season; Taft Woolen Company, stripes, 19 cents; suitings, 20 cents; fancy twists, 21 cents; fancy suitings, 22 1/2 cents; cassimeres, 25 cents; club checks, 27 1/2 cents; Charles River Woolen Co., 6 1/2 oz. thibet, 20 cents; twills, 18 cents; stripes, 20 cents; twill suitings, 21 1/2 cents; suitings, 23 1/2 cents; fancy suitings, 25 cents; cassimeres, 27 1/2 cents; melton checks, 30 cents; H. T. Hayward's Mills, twills, 19 cents; herringbones, 19 cents; stripe twills, 21 1/2 cents; suitings, 22 1/2 cents; cassimeres, 23 1/2 cents; fancies, 25 cents; Wm. E. Hayward & Company, 7 oz. Lenox thibet, 22 1/2 cents; 7 oz. Douglas thibet, 27 1/2 cents; 7 oz. Douglas twills, 27 1/2 cents; Douglas stripes, 28 1/2 cents; plaids, 30 cents.

Stroud & Crawford show Faulkner 12 oz. worsted at 75 cents 6/4; 12 oz. worsted cassimeres, 75 cents; Faulkner's 9 oz. worsted tropicals, 80 cents; Tilton 6/4 fancy trowsering twists, 55 cents; 12 oz. fancy cassimeres, 57 1/2 cents; also fancy worsted from the Premier Mills at $1.25 and $1.35.

Morton H. Meinhard & Company are showing the Greer fabrics at 27 1/2 cents to 33 1/2 cents; Quaker City tropicals, 25 cents; Cumberland suitings, 57 1/2 cents; United piece dyes, $1.22 1/2.

Gils L. Rosenberg is showing the Bradford Mills' fabrics 10 to 11 oz. piece dye fancies, 70 cents; fancy shadow plaids, 75 cents; 10 to 11 oz. tropical worsteds, 80 cents; 14 oz. trouserings, 85 cents; 12 oz. trouserings, $1.00; J. W. Smith Woolen Company wool suitings, 62 1/2 cents, and a line of trouserings at 65 cents; Wright & Hall's line of 11 oz. tropicals at 65 cents.

Forstman & Company show an additional line of all wool cassimeres at $1.22 1/2.

Greely, Cushman & Record are showing the Old Town suitings at 70 cents; Oakland suitings, 67 1/2 cents; and Waverly suitings, 72 1/2 cents; Pittsfield suitings, 80 cents.

Davis & Brown thibets from 75 cents to $1.25.

DRESS GOODS.

At the present time there is little activity in the dress goods division, but this quiet is to be expected at this mid-season period of the year.

Dress goods buyers will not come into the market for another two weeks, and no improvement in existing conditions is likely to take place until then.

Duplicate business for current consumption is received in considerable volume for plain fabrics, such as voiles and panamas, and also for cream mohairs and cream storm serges.

Low grade worsted plaid suitings on the order of those produced by the Shawnee Woolen Mills, 36 inches wide at 34 cents, 2/10/60, are in constant request. They come in about 30 different patterns, and are excellent value under present market conditions.

Notwithstanding the apathy at the moment, both mill agents and importers report a satisfactory fall business, and the prevailing feeling is one of contentment in this regard.

It is stated that the predominance of the orders booked are for plain monotone fabrics, and it is probable that broadcloths will prove popular for another season; orders taken for fall on these soft finished broadcloths have been exceptionally large.

Such materials as panamas and prunellas will undoubtedly prove leaders in the selling. Fancy dress goods, however, are by no means neglected, and the business booked by the cutters indicates that they will be much in evidence, but the occasions upon which fancies may be worn are somewhat restricted, when comparison is made with the plain monotones.

SILKS.

The silk situation is far from being satisfactory and there is very little business being transacted, with the exception of plain black and colored taffetas for immediate consumption, with the addition of some requests for rough shantungs and pongees.

The decline in the price of raw silk and the unsettled conditions, are a source of

worry to the manufacturers and the slump in the demand is an additional cause of anxiety.

The new fancies shown for fall are a continuation of last season's weaves and qualities.

Dark plaids and checks predominate in all the collections shown by the box loom manufacturers.

Pekin striped taffetas and velvet stripes on chiffon are among the high grade styles in both self and contrasting colors.

Leather brown, navy blue, black and white are the favorite colors.

Pile fabrics will be as popular during the coming fall as such goods have been during the last few seasons.

The vogue of chiffon light weight velvets for dresses will not be as pronounced as last year, but paon velvets promise to be more popular than ever for trimming purposes.

COTTONS.

The question is often asked by the buyer how much longer are the present famine prices going to continue.

There is certainly not much relief in sight; prices instead of declining are continually climbing to still higher levels.

Brown and bleached cottons are in such demand that the mills are daily turning away business, and colored cottons of several tickets are still at value.

MEETING OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The eighty-third meeting of The National Association of Cotton Manufacturers will be held at Washington, D. C., October 3 and 4, 1907. A large number of English and Continental cotton manufacturers are expected to be in attendance at the sessions; other features will contribute to making the meeting a highly interesting one. The sessions will be held in the ball-room on the tenth floor of the New Hotel Willard, which is admirably adapted for such meetings. After the meeting arrangements will be made for those who desire to continue their journey to the Second Conference of Cotton Growers and Manufacturers to be held at Atlanta, Ga., or to sail down the Potomac River to the Exhibition at Jamestown.

RAMIE AGAIN.

Editor Textile World Record:

The U. S. Consul at Calcutta writes to the State Department that the culture of rhea, or ramie, is something that should interest the United States, as it is superior to jute. He further states that the difficulty, heretofore, in putting ramie on the market has been the slow and expensive process of "degumming or decorticating." This has been overcome by a recent "discovery made by a resident of India, which is so economical and quick," etc. How familiar the words! We must have heard them, or read them, before, somewhere,—perhaps 40 years ago when we were young. It is said that in consequence of this discovery a local syndicate will soon be in position to place rhea fibre on the market in large quantities without the use of "any of the patented high priced machines for degumming," as the new process is simple and does the work easily.

When will writers on the subject learn that decorticating (extracting the fibre from the harvested stalks), and degumming (chemically treating the extracted fibre to free it from gums and impurities), are two distinct processes? When will they learn that the stumbling block in the way of the successful exploitation of ramie culture, is the want of a defibrating machine that will compete with Chinese hand labor? For it is a fact that the Chinese raw fibre, hand cleaned, can be laid down in San Francisco at the price of jute.

Since the researches of Fremy, a decade and a half ago, or more, we have known all about the degumming of ramie. In his valuable work on this subject he shows that the gums and cements holding together the filaments of ramie are essentially composed of pectose, cutose and vasculose, while the fibre itself is composed of fibrose, cellulose and its derivatives. The theory of degumming, therefore, is to use chemical solutions which will dissolve and wash out the gums without attacking the cellulose. To eliminate the vasculose and cutose it is necessary to employ alkaline oleates or caustic alkalies under pressure, and even bisulphates and hydrochlorites. And since the publica-

tion of the results of his researches upon the subject there has been no lack of processes for the degumming of ramie.

Cheap decortication is the problem. No machine has so far been invented that may be called an economical success, and in the extraction of the fibre by chemical action, as, for example, in a tank, a greater obstacle presents itself: how to mechanically separate the ton of woody stalks, and the less than a hundred pounds of fibre which will be found loosely clinging to them, when the work is done, without having to remove the fibrous ribbons by hand.

CHARLES RICHARDS DODGE.

UNWARRANTED DISCRIMINATION.

FROM "POWER."

John C. Black, president of the United States Civil Service Commission, has overstepped the bounds of reason and propriety, if not of law, in specifying that no applicant shall be eligible to take the civil service examination for the position of chief engineer in the United States Post Office and Court House Building at Chicago unless he is a graduate of a technical institution or engineering college. We understand that Mr. Black is supported in this position by the Hon. George B. Cortelyou, Secretary of the Treasury.

May we be permitted to respectfully represent to the Honorable Secretary of the Treasury that it is none of his distinguished business where the applicant for a position gets his knowledge or experience, so long as he has the necessary qualifications and can prove it. It is quite possible that the position in question, paying the munificent salary of eighteen hundred (not thousand) dollars per year, with an attainable maximum of twenty-five hundred (not thousand), may call for exceptional qualifications. It is quite within the province of the commission to require that the applicant shall be versed in thermodynamics, and the use of the integral calculus, but if a man has all the qualifications that they specify, all the practical experience that they require, if he can answer satisfactorily a sufficient percentage of the questions which they propound, what earthly concern is it of theirs whether his father bought his knowledge for him from a technical school, or whether by energy and application he dug it out of the solid rock in the intervals of his daily toil, or bending over the kitchen table when the "tech" boys were making night hideous with cane rushes and other improving pursuits?

The President of the United States is in complete control of the practice of the Civil Service Commission. He has never made nor sanctioned such a discrimination against the self-educated man; a discrimination which would have disqualified John Fritz as an engineer, Thomas A. Edison as an electrician, Sydney Gilchrist Thomas as a metallurgist, the author of the "Footprints of the Creator" as a geologist, and the better half of the exponents of applied science in the industrial world today.

Let the examiners find out what each applicant is, not how he became so. Let there be no discrimination, not even in favor of the self-made man as against the graduate.

Think it over, Mr. Secretary.

Give us a square deal, Mr. President.

WHEN ARE CLOTHS TENDER?

What is a tender cloth, and what is a strong one? The question may appear to some people to be a trifle ridiculous. When, however, the customary test for strength is examined—namely, the "thumbing" process—it begins to appear very much otherwise. Nevertheless it certainly is ridiculous that (say) a 13-ounce cloth 56 in. wide, made from fine Saxony wool, should be subjected to the same test as one of (say) 32 ounces of the same material. Or, to carry the point still further, it is positively unfair to the fine woolen cloth to expect it to stand the same thumb test as a fabric of the same weight made from worsted yarn, or from strong-fibred crossbred wool. And still more unfair is it to expect such a fabric to stand a strain equally with a worsted or coarse woolen one fifty per cent. heavier in finished weight.

Yet there are plenty of buyers in the trade who pronounce a cloth tender if they can get their thumbs through it, no matter what

the weight. If the cloth is 13 ounces per yard, or 18 ounces, or 26 ounces, and the thumbs go through, "the cloth is tender!" There are no degrees of tenderness; it is just a singular condition. The thin cloth, the thick cloth, the fine fabric and the coarse one, the worsted, the woolen—are all tender if the buyer can break it by thumbing, and strong if he cannot. There are degrees, too, in the strength of buyers' thumbs; some operators can break almost anything, while others wince with pain when they try to thumb a moderately strong fabric. Yet there must be no degrees of tenderness—no allowance made for the thin cloth or the cloth made from fine-fibred wool, against its naturally more robust sister crossbred, or its stouter brother of the same material.

Many manufacturers, especially the makers of woolen fabrics from fine-fibred wools, complain a great deal of the unfairness of buyers in this matter. Although the wearing properties of such fabrics are good, they will not stand the thumb strain that worsteds or coarse woolen fabrics resist. Consequently, it is quite easy for a merchant to find fault with a piece he has ordered and, when it is delivered, does not want. "It is tender! Send it back!"

What is required is a more intelligent method of testing. The War Office contracts when given out specify a certain breaking strain of both warp and weft, and goods delivered at the Royal Army Clothing Department are subjected to this mechanical test. Manufacturers know then what they have to work to; and if a cloth falls short of the standard, they know the test has been uniform and fair. But merchants' thumbs vary greatly in breaking power, and the cloth is usually at the mercy of a buyer's caprice. It is a fact, too, that cloths when damp break easier and at a lower standard than do dry ones; so that a cloth just home from the dampers may be weaker than when it was delivered dry from the mill. It is feared that matters will have to continue as they are; for merchants think they have sufficient to do already without the introduction of mechanical tests for strength, and the old method of test of thumb will prevail.—The Textile Mercury.

MAN AND MACHINERY.

BY HENRY P. GREG.

(Before the Conference of Managers of Textile Works, Manchester, Eng.)

I imagine you want me to tell you what in my judgment are, not the perfections, but the imperfections of the Lancashire staple industry.

For almost twenty years I have been actively engaged in the Lancashire cotton industry, and during that period I have witnessed great improvements in textile machinery, the two greatest being the hopper feed bale breaker and the Northrop loom; but apart from these there have been improvements in detail of construction and execution which enable more work and better work to be turned out of almost every machine. We have watched, studied, and examined machinery with an intensity that has narrowed our vision, distorted our outlook. We have watched, studied, and examined the production of each frame with apparently the one object of getting the maximum production out of each frame. As the result we have got our machinery in any up-to-date mill in excellent order.

While this tendency to watch, study, and examine every detail of machinery has been in progress, exactly the opposite tendency has been in progress as regards those who work the machinery. I want the masters to transfer their attention for the next twenty years from machinery to man;—not to neglect the former, but to watch, study, and examine man with the minute attention that for the last twenty years they have given to machinery. In our labor market we have the finest material in the world, contented, intelligent, reasonable, and that in spite of indifferent education, not because of a highly technical training. The fact that our labor is so good has misled many to the conclusion that our educational methods are satisfactory, and that improved methods may lead to disappointing results. I can only say that if our operatives received the same instruction as is given in America or Germany the result would surprise even the most optimistic among us.

Tonight our concern is with man not in

the school but in the mill, and the way in which the master or manager can get the best work out of him. The most important point is to gain mutual confidence in each other's fairness and straight dealing, and the easiest way to obtain this is that every transaction between master and man shall be considered from the other's point of view. Thus, supposing an operative or class of operatives ask for a rise in wages, do not regard it as an exhibition of an unreasoning, ungrateful, grasping disposition, but consider if you were in their place would not you very likely be asking for a rise?

And I venture to suggest that, if you do this, you are more likely to be impressed with the moderation than with the extravagance of the demand; in any case, it will remove all feeling of personal indignation, which is too often privately felt and too often publicly expressed when any question affecting wages arises, and which more than anything else engenders resentment, the most potent cause of strikes or lock-outs. Then the master must be scrupulously fair. An operative has a very keen perception of this, and it is policy for the master to pay a pound too much rather than a penny too little: for an operative would as lief be cheated of a pound per week as a penny per year. And in this he is right, for he cares not for the amount but for the principle. In using the strong word cheating, I use it advisedly. I know masters, as a rule, are quite above any charge of cheating; only few regard seriously the payment to the operatives of the uttermost penny that has been earned, but the operatives regard the last penny as jealously as the first, and from their conception of fair dealing it is as necessary to pay the last as the first penny. Until this mutual trust and good faith is established between master and man, it is useless to attempt to take advantage of my subsequent suggestions. You might as well try to run your machinery satisfactorily without oil as organize your work-people satisfactorily without this trust in each other. It is every bit as important as oil, and as easy to obtain, if you go about it in the right way.

Granted this is obtained, what is the next step? It is to remember, if you want good men at the top you must be very careful whom you let in at the bottom. I have never hesitated to tell the manager who complains of his hands, that the fault is his and the remedy his. A good manager has good hands; a bad manager indifferent ones. I believe the manager should engage every boy or girl, man or woman, who is taken on. It is a duty far too important to be left to any overlooker, however trustworthy. The overlooker may do all the preliminary selection, but the final engagement should be made by the manager.

The manager should see the boy or girl, man or woman, in his office, and enter on an index-card the name, address, age, previous occupation, or other pertinent details of his or her previous history, the date of engagement, the wage or rate of wages agreed upon, and the work or department to which the applicant goes. These cards should be filed, and the office staff should be instructed to note on them any alteration in work or wages, and the manager should feel at liberty to make any remarks on them that he may think likely to be of use for future reference. The personal interview on first engagement is of the greatest possible value. It enables the manager to know individually every operative; it enables him to make any general remarks he may think advisable as to the discipline in the mill or the method of organization; it enables him to say a kind word, which the boy or girl, or, for the matter of that, the man or woman, may treasure all their lives; it enables the applicant to know who the manager is, and, by the creation of a personal feeling between master and man, to realize that in case of need or difficulty he or she may always personally approach the man in authority.

This direct selection of every applicant carries with it as a necessary sequence that every operative must be paid direct from the office: no work must be farmed out. The system of the spinner paying the piecer and little piecer must be abolished. It is entirely wrong for the spinners to introduce whom they like into a mill with the power of paying them what they like and dismissing them when they like. These powers must be in the hands of the manager alone, otherwise

he is unable to organize the work as he thinks desirable, and all he can do is to do his best as far as those under him will allow him. Be careful in the selection, and do not hesitate to reject an unsatisfactory applicant. It is no kindness to the applicant to engage anyone whom you feel to be unsatisfactory, still less is it a kindness to those whom you have already at work.

Some may say that all should have a chance, but I believe that giving the unfit a chance only tends to create and keep going the unfit, and that if the unfit had not a chance the unfit would very soon disappear. Having made the engagement, it is well for some months to keep a specially watchful eye upon the operative and to note whether he or she shows any special aptitude, and if so do your best to stimulate and encourage that aptitude, even to the extent of moving him or her from one department to another. Then when any chance of promotion arises, keep in mind two points: first, that promotion is by merit and not by seniority; and second, and even more important, that for any vacancy there may be any number of applicants, but there is only one fit for the post, namely, the best. This is very frequently ignored; one hears it said that two or three are equally good for a post. This is as impossible to be the case as it is impossible to find two leaves on an oak tree exactly the same. You must go in for a most careful selection by elimination, and I venture to assert you will find my proposition true, that for every vacancy there is only one applicant fit for the post. In making promotions it is well to remember that a willing hand is worth double an unwilling hand. This is not always apparent, but it is so sufficiently often to justify my stating the case so strongly. I need not warn you against favoritism; its dire effects are so well known, so well recognized, that no words from me are required to emphasize its evil. There is another insidious evil, the opposite of favoritism, but almost as baneful in its effects, and it is holding back bright, pushing, intelligent operatives. It is a curse to the country and it is wrong from beginning to end. It is based on the fear that the pushing youth may supplant the man immediately over him. Now this man ought to be proud beyond words if he can train anyone to outstrip him, and if there is the right grit in his character he will follow with pride the successful careers of those whom he has helped to higher positions.

We cannot all be captains of industry, but we can all help to train them. Such a trainer runs no risk of being supplanted. But if he withholds information from the pushing youth, constantly reports him to the manager or master as one who does not know his place, retails his bad points, but never his good ones, such a man naturally fears that the pushing youth may supplant him, because he knows within himself that he deserves to be supplanted. The fear of letting a subordinate know too much is far too common; it chills inquiry, it often kills ambition. It shows a craven spirit, a cowardly nature, distrustful of itself, and therefore, distrustful of others. It strikes at what I believe to be the secret of success. If I am asked by anyone entering business how he is to succeed, I say, know a little more than you are expected to know, and do a little better than you are expected to do. So many go through life knowing what they are expected to know and doing what they are expected to do. And they are satisfied, absolutely satisfied with themselves. They are the average, they are the 99 out of the 100. They are everywhere useful, steady, industrious. I have no complaint to make against them, but they do not get on.

If our nation is to maintain its proud position either in intellectual or commercial pursuits we must manufacture men who get on. Now this fear of a subordinate knowing too much is dead against this most important manufactory. Besides, it is incompatible with that sense of mutual trust of which I have already spoken. You never know when the knowledge so withheld may prove of infinite value to you; besides, there is truth in the old saying, "A little knowledge is a dangerous thing." Choose your men carefully, and then trust them implicitly. Train every piecer to be a spinner; every spinner, an overlooker; every overlooker, a manager; and every manager, a captain of industry. Train everyone for the position next above

his present one. Help—but do not hinder. Show each operative that you take a special interest in his or her welfare.

If a young man shows exceptional promise of ability try to push him faster than the ordinary mill promotion allows. This can often be done by drafting him into the mechanic shop or office—giving him special work, such as wrapping or weighing—and so enabling him to see the various processes in the various parts of a mill. Such training is of more value than what can be obtained in the technical school, valuable as that is. Aim at making the operatives feel that they have an interest and a share in making the business successful. This can be done by occasionally asking an operative how a machine is running and adopting his suggestion.

Another method is to provide a suggestion box, and to ask any operative to write on a slip of paper any suggestion with regard to the comfort, safety, or health of the employes, means by which waste may be prevented or time saved, improvements in machinery or organization, the introduction of new ideas, or the diminution of existing defects. These slips should be placed in the suggestion box and collected weekly or monthly, and it is advisable to offer five shillings or ten shillings for each suggestion which you think sufficiently useful to adopt. Having thus made every operative feel that his ambition will receive fair play, it is necessary to see that each individual is able to do justice to himself, and here I own there is a difficulty, for each individual differs, and therefore requires different treatment. But in a mill, as in an army, there must be discipline and organization, both of which are greatly helped on by uniformity. Still, difficulties are made to be surmounted, and this would be a very tame and uninteresting world if there were no difficulties.

My first point here is that each process should be very carefully examined and the best way of executing that process discovered, and then everyone trained in that way. This point is best made by a concrete example. Take the doffing of a roving frame. You will find this done by almost every tenter in a slightly different way, perhaps so slightly different that you are hardly aware that there are different ways. But look carefully and study these differences, bearing in mind that there is only one right way of doing anything, and that the best. Find it out, and then see that everyone does it. Do this not only in doffing, but creeling, oiling, cleaning, etc.; not only in the roving frames, but in all the machines throughout the mill. You will note one hand keeps his or her machine cleaner than another. See how this is done, and then see that it is adopted throughout.

My next point is, see that every operative is fully employed, not over-employed nor under-employed, though I believe of the two evils over-employment is the less. We are told that some people are born tired. I believe far more are bred tired. It is a curious but certain fact that the human machine can work most efficiently at a certain speed, and that below or above that speed there is waste and loss to both master and man. To illustrate this, suppose a winder, tending 40 spindles at 750 revolutions per minute, wound 40 pound of 20s per spindle per week, and suppose this represents the point where the operative is neither under nor over worked. Now if all the conditions are the same, rate of wages included, except that the winder tends 35 spindles, you will find the production, instead of being greater per spindle, as you would naturally expect, owing to there being fewer spindles to look after, is actually less.

The fact is it is easier for an operative to work continuously at a reasonable speed than to work intermittently at a higher speed, and it means a greater production to the master. Any person working below his speed of greatest efficiency soon gets slack, and slackness soon breeds that tired feeling which develops sullenness and stupidity, the two greatest evils a mill manager has to fight against. Therefore note every person in the mill whom you see doing nothing, except the overlooker, who ought to have nothing to do, and note them, not with the object of driving them, for driving is as foolish as it is unnecessary, but with the object of so organizing the work that no opportunity shall occur for anyone to be

doing nothing. Often some other person may be working too hard, in which case the balance may easily be adjusted. In other cases it may necessitate elaborate reorganization, but it is always worth making the attempt, if only because it is true "Satan finds some mischief still for idle hands to do."

Another point worth study is the weekly wage list, especially of those on piecework. And this again is with no view to driving. It is hard to condemn too strongly the not infrequent custom of picking out those who earn the lowest wages, and telling them unless they do better they can look out for another shop. It is cruel, it is injudicious, and strikes a fatal blow at that sense of mutual trust on which I lay so much emphasis. But, in picking out those who earn the lowest wage, do so in full confidence that the lowest wage-earner is doing his or her best, just as much as the highest wage-earner is doing his or her best.

Having noted down the lowest wage-earners, say nothing, but go and watch them and their frames. You may find that they are performing part of their work clumsily owing to lack of training, that their method is bad, the order in which operations are performed wrong. A few kind words will put all this right. Tell them you think that they will find it easier if they do so and so, and that it will enable them to earn rather more wages.

Far more often you will find that it is not the man but the machine at fault, and I can tell you you will save yourselves heaps of trouble if you blame the machine and not the man, and this for two very good reasons: firstly, it generally is the machine which is at fault, and therefore the blame falls on the right shoulders; and secondly, the machine is so constituted that it cannot harbor a grudge. Examine closely the machine and you may find the strap loose or perchance too narrow to drive the frame up to speed, or you may find the stoppages excessive owing to breakages. In which case make sure whether the breakages are due to faults in that machine or in some previous process, and to trace these faults effectively you must remember that there is not a breakage from cotton to cloth but that there is some avoidable cause for it. You may find some bottom roller jumping, the cap bars of the top rollers badly set, the top roller leather grooved, a spindle out of truth, the frame running at too high a speed, indeed a hundred and one things may be wrong. Have these put right, and I venture to promise you that by these methods you will more easily get rid of the low wage-earners than you ever can by threats of the sack.

Having thus at length explained the principles of treatment that should be observed between master and man, and knowing that the usefulness of my subsequent remarks depends on the realization of those principles, I go back to my main proposition, and it is this. In the past you have devoted your time and energy to see how much you can get out of each machine, the maximum production per machine; now I want you to transfer your time and energy to man, and to see how much you can get out of each man, the maximum production per operative —a wholly different proposition. Do not bother so much with the number of hanks you can turn off a machine, but work out weekly and study carefully the wage cost per pound. Do not trouble about the loom average, but work out weekly and examine carefully the number of picks that the weaver gets off the looms tented.

Am I not more than justified in calling your attention to this point? The position today is such that wages form a larger item in the cost of production, apart from the raw material, than all other items put together. Take a 60,000 mule spinning mill or a 40,000 ring spinning mill entirely on 30s twist, producing 60,000 pounds of yarn each week, and let us compare the capital charges and wages charges in each case from the mixing-room to the yarn wound on winders' bobbins. We may put the cost of the machinery in the ring mill at £26,000 and the weekly wage bill at £188, and in the mule mill at £24,500 and £232 respectively, apart from office staff, overlookers, and odd hands. Now take the annual charge, and let us allow 10 per cent. depreciation and 5 per cent. interest, and calculate on 50 weeks in the year.

We find the capital charges in the ring mill to be £3,900 and the wage bill to be £9,400, and in the mule mill to be £3,675 and £11,600 respectively.

In a weave shed with ordinary Lancashire looms the figures are still more striking. A thousand looms we may say cost £7,000, and the weekly wage we may put at £300, or the annual capital charge £1,050, and the wage bill £15,000.

Surely these figures prove my contention beyond a shadow of a doubt that today the problem before the Lancashire textile trade is to see not how much it is possible to get out of a machine, but how much it is possible to get out of an operative. Some may think that already they give this point very special attention. But the same people have proved to me that this principle of getting the most out of the operative has, as yet, not entered their heads, for they will argue that supposing an operative can earn 5s. per loom whether working four or six looms, it does not matter to the master whether he works four or six looms. It matters in many ways, but at the moment I merely want to point out that such a man has not grasped the idea I lay so much stress upon, viz, to get as much as possible out of each operative, and that even when the rate is the same it is most important to get as much as possible out of the operative without driving or over-working.

And this must be done, let it be clearly understood, without driving or over-working. How? Well, it is necessary to see that the machinery is in proper adjustment, and the right cotton bought. You can spin a better weaving yarn out of an even inch staple than an uneven 1 1/8 inch staple. The hopper feed bale breaker has made a revolution in the trade, but few mills have taken full advantage of its benefits. It opens and mixes the cotton better than was possible with the Oldham willow or bale breaker, and this better opening enables the cotton to be cleaned better in the scutching-room and to be drafted more evenly in the card-room and spinning-room. More attention therefore is required today to the speed of the beaters and fans, to the inlet and outlet of air in the openers and finishers, to the twist, and to the setting of the rollers in the speed frames. Less twisting and closer setting are possible. When I started business I was often told—Given a good roving you can spin it on the wheel of a barrow. I never agreed with the latter portion of the assertion, but I soon realized the importance of a good roving. But I found that to get a good roving you must have good intermediate, and so back to the cards, and then I found that if you want a good level card sliver you must have a good level lap. Today I believe the blowing-room should receive far more attention than it does.

I was once in a mill where they were most particular about their lap weights, and so proud of their system that I was asked to inspect it. I saw the laps weighed and the weights all noted down, and found them comparatively uniform. The laps were weighed with the rods in, and, out of curiosity, I asked to see some of the lap rods weighed. They varied to the extent of seven ounces! I mention this merely to show the necessity of increased attention to detail. Then see that there are as few piecings as possible, that is, on every bobbin get the maximum of length. By these means you will enormously reduce breakages.

In a well-regulated mill there should be no breakages due to anything but piecings. Thus it is easy to see how important it is to have as few piecings as possible, and those few as well made as possible. No licking of the finger should be allowed. Next, to secure the most out of an operative you must be alert to secure and adopt all labor-saving devices and machinery. The sooner this is done the better. The tendency of wages is upwards, and we must all wish this to continue. A 5 per cent. advance on a wage bill of £1,000 is £50; but on £800 it is only £40. So that in adopting labor-saving devices, even if you are not able today to see a substantial gain in reduced cost of production, it may show a very substantial gain when the next 5 per cent. advance is granted.

(To be continued.)

The total value of all kinds of cotton manufactures exported from Great Britain in 1906 was $484,715,737.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

OUR TEXTILE SCHOOL.

(Continued from June.)

A change in the general effect of these combination weaves, as thus far explained, is next produced by means of cutting off the two effect weaves, i. e., having risers opposite sinkers or vice versa at the two ends, warp as well as filling ways, where the two weaves join, in this way producing a cut-off effect at these joining places of the weave. In order to illustrate this affair, weave Fig. 3 is given, and in which again the $^{2}-_{2}$ 4-harness 45° twill is used for the basis; i. e., combining said regular twill after the "plain motive setting" with its entwining twill having three pieces of twill running in one direction, entwining with three similar pieces of twills running in the opposite direction, or in other words the same entwining twill as used in the previous example, or weave Fig. 11 given in connection with Lesson VI. The cut-off threads in this instance are warp threads 1, 24, 25 and 50, as well as picks 1, 27, 28 and 52. The drawing-in draft is again given below weave (see [x]) and calls for 24 harnesses, drafting the first 12 harnesses twice over and proceeding in the same manner with the last 12 harnesses twice over plus drawing in addition once more on harness 13 and 14, in order to produce the required cut off effect in this instance.

The repeat of the weave is 50 warp threads and 50 picks.

A close study of the weave thus given will readily show the student how to produce in the same manner an endless variety of this style of cut-off effects. Again, in practical work, two repeats of the entwining twill may be too small an effect for the loom, but which will not interfere with the general construction of the new weave thus explained, since the student will readily understand that any time he has it at his option to add a multiple of 12 ends or picks to either the entwining twill or regular twill effect, without necessitating a special explanation any further than drawing accordingly once, twice or more times over, each set of harnesses previously quoted, as well as building accordingly 12, or a multiple of 12 bars (as the case may require) additional for each effect in the harness chain, a matter quite simple for anybody versed in the construction of weaves.

Weave Fig. 4 shows us another novel effect of this class of combination weaves and which might be considered as a mixture of the two effects previously quoted, i. e., a combination of what we might term "cut-off" effects as well as a "running-in" effect, the design itself representing both characters.

The foundation weave used for the design is our $^{3}-_{1}-^{1}-_{1}$ 6-harness regular twill, the same being used for 24 warp threads and 24 picks in this state, to exchange after the plain motive setting, with 24 warp threads and 24 picks of its mate entwining twill, having two pieces of 3-up twills entwining against two similar pieces of twills running in the opposite direction. The repeat of the complete weave, as will be readily understood is (24 × 2) 48 warp threads and 48 picks and which by means of its drawing-in-draft, as given below, by means of [x] requires a 24-harness fancy draw, drawing first twice on the first 12 harnesses and afterwards twice on the last 12 harnesses. It will be also readily understood that this combination effect as repeating on 48 warp threads and 48 picks, can be increased to any number of threads and picks for the repeat, by simply adding 12 or a multiple of 12 ends and picks to either of the two combination weaves, without departing in the least from the principle of construct-

ing said new weave, since in practical work, it simply will mean draw once or oftener on each set of 12 threads according to size of effect required in the woven structure, we only selecting the smallest possible entwining twill to be used, on account of having to bring the complete weave within compass of the page, using two repeats of the complete weave in this instance as well as in the previous instances for the special reason to show the proper connection of the first thread and the last thread of the complete

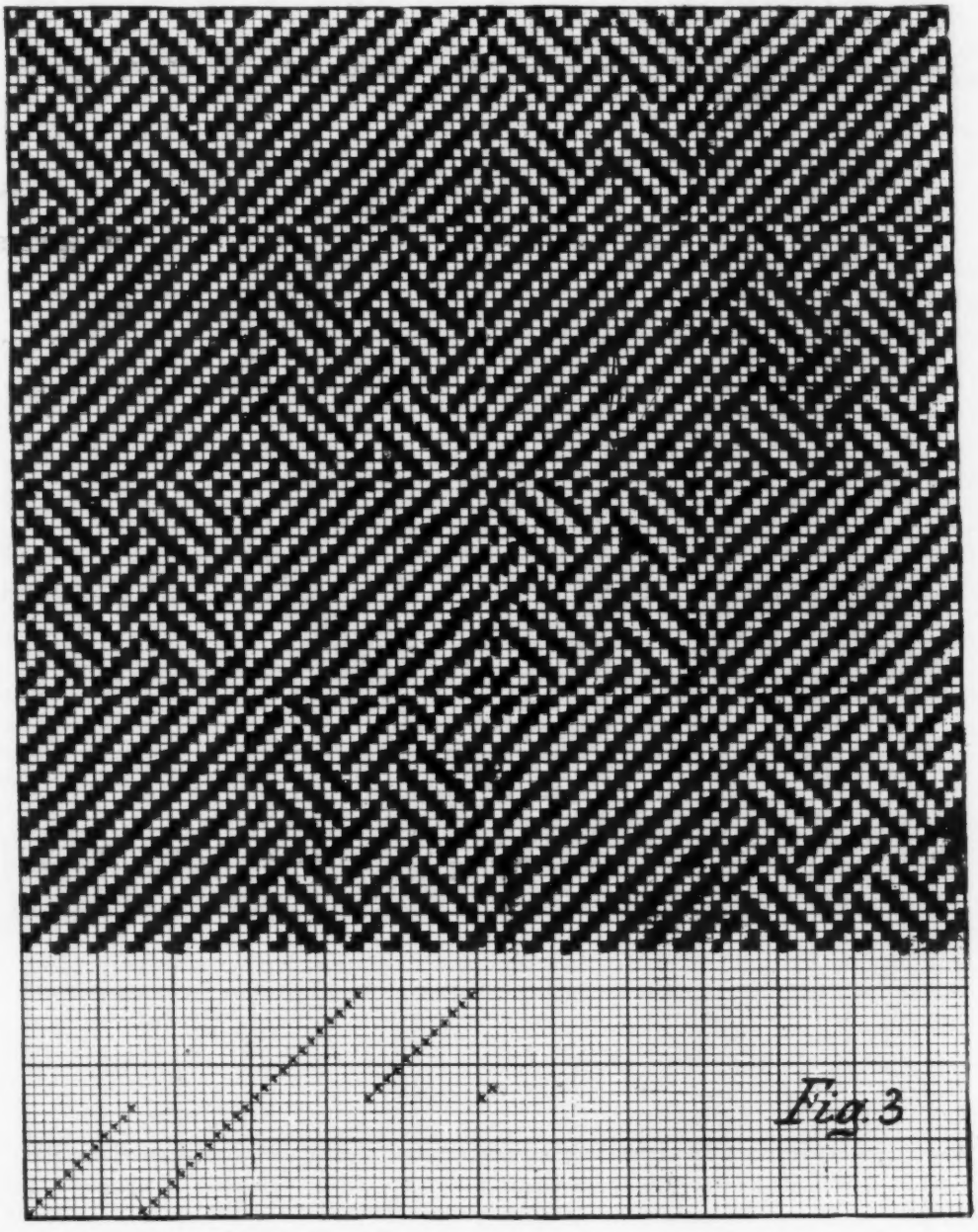
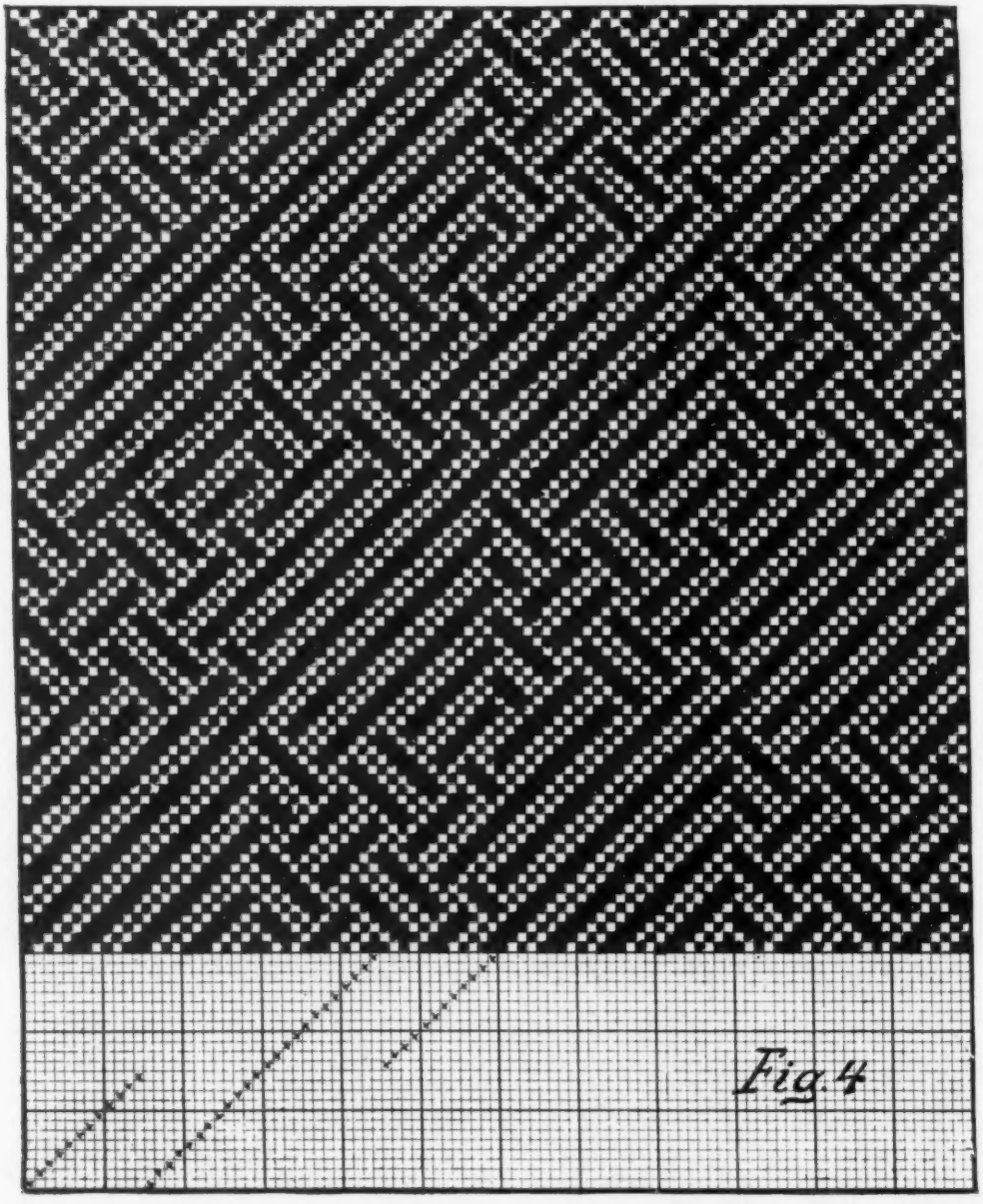


Fig 3

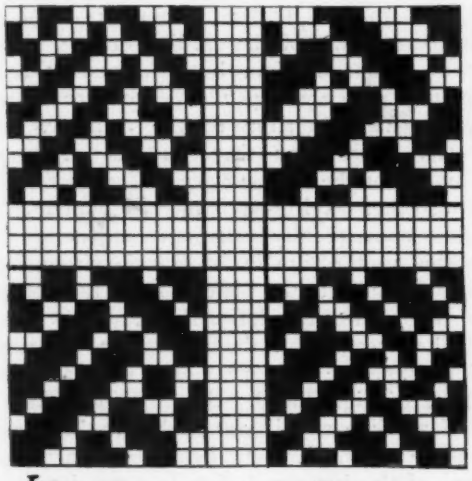
weave, both warp and filling ways, as well as giving the student a good idea of the general character of the weave in the woven fabric.



Weave Fig. 4 will at the same time serve to illustrate to the student another new combination weave, i. e., the $^{3}_{3}$ 6-harness twill for the foundation of both its regular twill as well as its entwining twill, by simply omitting the single twill line throughout the entire repeat of the weave, or in other words change the $_{1}{}^{1}_{1}$ to the 3 down straight through.

Having thus given a thorough explanation

how to combine entwining twills with its mate regular twills in the formation of new large combination weaves, i. e., jacquard effects, we next give on plate Fig. 5, a collection of four entwining twills which we would advise the student to combine with its mate twills in connection with a "cut-off" affair,



Lesson Fig. 5

or a "running-in" affair, or what will be better yet, construct a new design for each effect. Only one repeat of the entwining twill is given the student, and which will at once necessitate for him to construct himself two repeats each way of said entwining twill, in order to be able to understand as well as handle said weave more readily in the formation of the new combination weave.

A LATE IMPROVEMENT IN SHUTTLE-BOX-OPERATING MECHANISM.

The object is to provide a shuttle-box-operating mechanism by means of which any one of the boxes as the pattern of the fabric woven may require, is brought very evenly and steadily into alignment with the raceway of the lay by means of a gradual steady operation of the mechanism, in turn reducing the chances of breaking picker-sticks.

Of the accompanying illustrations, Fig. 1 is a perspective view of the new box operating mechanism, showing also those portions of one end of the loom to which the same more particularly refers; Fig. 2 being a somewhat enlarged (compared to Fig. 1) sectional view on line x-x of Fig. 1.

With reference to letters of reference in our illustrations, A denotes a portion of the frame of the loom, provided with the usual bracket, b, in which is journaled the picker stick, B. The respective series of the shuttle boxes as required to be shown, so as to more clearly illustrate the method of operation of the new mechanism, is indicated by letter of reference, C.

The body portion, a, of this new mechanism consists of a hollow tube, a′, provided upon each end with lugs, a^2 and a^3, respectively, the same being disposed to each

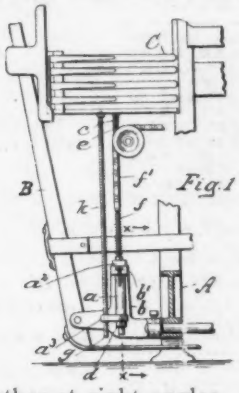


Fig. 1

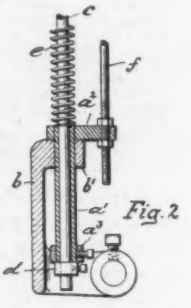


Fig. 2

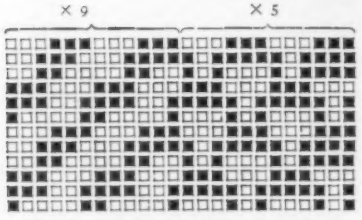
other at right angles. b refers to a bracket formed at its upper end with a laterally-extending perforated lug, b^1. c refers to the shuttle-box lifter-rod, the upward movement of which is limited by a collar, d, adjustably secured thereon by means of a set-screw. This shuttle box lifter rod, c, is provided with a coil-spring, e, adapted to be compressed between the under side of the shuttle-box and lug, a^2, which carries the threaded end of rod, f, as is secured to the end of sprocket chain, f^1, as is operated according to the arrangement of the filling required to be picked from the box motion of the loom. Lug, a^3, in turn carries the lower end of the usual spring-pressed rod connection, g.

The operation of the new box operating mechanism is thus: When a pull is exerted upon rod f by the action of the box motion, sleeve a rises, sliding through and guided by lug b^1, until lug a^3 comes into contact with

the under side of lug b^1. During this operation, shuttle box and lifter rod c have lagged behind on account of their inertia, compressing the springs e and k. When, then, the upward movement of the sleeve a ceases by contact of lugs a^3 and b^1, the spring e expands and completes the upward movement of the shuttle-box to its proper level with the race-way of the lay.

The shuttle-box in turn is lowered upon release of the jack of the box motion by means of the spring k.

Worsted Suiting.



Complete Weave.

Repeat 168 × 6.

Warp—5376 ends, 12 harness, fancy draw.

Reed—14×6=64 inches wide in loom.

Dress—16 sections @ 336 ends (2 patterns)

1 end, 2/48's worsted, black.....= 1 end
2 ends, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black and blue gray mix twist..... × 7 = 21 ends
2 ends, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black..... × 5 = 15 ends
2 ends, 2/48's worsted, black and gray twist.....= 2 ends
2 ends, 2/60s worsted, black and medium blue twist.....= 2 ends
1 end, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black and blue gray mix twist..... × 7 = 21 ends
1 end, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black and gray twist.....= 1 end
2 ends 2/60's worsted. black and medium blue twist.....= 2 ends
1 end, 2/48's worsted, black and gray twist.....= 1 end
1 end, 2/48's worsted, black.....
2 ends, 2/48's worsted, black and gray twist..... × 6 = 18 ends
1 end, 2/48's worsted, black and blue gray mix twist..... × 7 = 21 ends,
2 ends, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black and blue gray mix twist.....= 1 end
4 ends, 2/48's worsted, black and gray twist.....
1 end, 2/48's worsted, black.....
1 end, 2/48's worsted, blue green..... × 3 = 18 ends
4 ends 2/48's worsted, black and gray twist.....= 4 ends
1 end, 2/48's worsted, black.....= 1 end
1 end, 2/48's worsted, black and blue gray mix twist.....
2 ends, 2/48's worsted, black and gray twist..... × 7 = 21 ends
2 ends, 2/48's worsted, black and gray twist.....= 2 ends
1 end, 2/48's worsted, black.....= 1 end
1 end, 2/48's worsted, blue green.....= 1 end
4 ends, 2/48's worsted, black and gray twist.....= 4 ends
1 end, 2/48's worsted, black.....= 1 end
2 ends, 2/48's worsted, black and gray twist.....= 2 ends
1 end, 2/48's worsted, blue green.....= 1 end
1 end, 2/48's worsted, black.....= 1 end
4 ends, 2/48's worsted, black and gray twist.....= 4 ends
1 end, 2/48's worsted, blue green.....= 1 end

Repeat of pattern: 168 ends

Filling—76 picks per inch, arranged thus:

1 pick, 2/48's worsted, black and gray twist.....
1 pick, 4 1/2 run woolen yarn, black.....
1 pick, 2/48's worsted, black..... × 7 = 21 picks
1 pick, 2/48's worsted, black and gray twist.....
1 pick, 4 1/2 run woolen yarn, black.....
1 pick, 2/48's worsted, black and blue gray mix twist..... × 7 = 21 picks

Repeat of pattern: 42 picks

Finish—Worsted finish; 56 inches wide.

WOOLEN CARDING.

(Continued from May.)

The doffer cylinder certainly is a most important part of the carding engine, since upon it, production, both in quality and quantity largely depends. The larger the doffer in proportion to the cylinder, the better, since then there are as large an amount of the two surfaces in contact with each other as it is possible to obtain and when consequently more combing action is gotten in the film in its transfer from the main cylinder to the doffer. Keep the points of the teeth of the doffer sharp.

The breaking of the roving on the ring doffers, before being rubbed, is generally the cause of high speed. Set top and bottom doffers alike and if you find that the work on the top doffer runs heavy, compared to that of the bottom doffer, increase its surface speed in place of setting off and allowing extra material to be carried around by the cylinder.

Unevenness in the drawing or roving may have for its cause imperfectly set feed rolls, they ought to be set true and level to each other and besides set true with the card, the setting of these feed rollers to each other depending upon the character of the material to be carded.

Always have your belts on the pulleys before setting, since otherwise the tension exerted by the belts will influence your setting, provided the same has been done with the belts of the pulleys.

If we should find that in connection with the breaker and intermediate card, after a too close setting of workers to the main cylinder, their teeth by this contact become blunt, grind then as soon as possible; if however such a case refers to the finishing card, grinding must then be done at once, for the reason that otherwise the wire is sure to get out of position rapidly, more particularly so on fine work.

Another item of importance to good card-

ing is the respective temperature of the card room, the work proceeding more satisfactorily in dry and warm weather as compared to rainy, damp weather, and when naturally, both the material and the machinery will become damp; for which reason, when the latter weather sets in, keep steam up in the heating pipes of the card room, both day and night, so as to counteract the influence of such damp weather.

Never strip a card until you find it necessary to do so, neither experiment in grinding a card that is smooth and sharp, nor fix a card until you know where the trouble rests. As will be readily understood, the clothing of the finisher card will last longer than that of the intermediate or breaker card and naturally that of the intermediate longer than that of the breaker card (that is provided each carding engine does its share of the work) on account of the breaker card having to do the hardest part of the carding, with the intermediate card following, the finisher card having to do the least hard work, since the two preceding cards opened out any locks or bunches which originally the wool contained.

Nothing is better for perfect carding than a clean room, consequently see to it that such is always the case. Provided the life of the clothing has gone, re-clothe the card as quickly as possible, since otherwise imperfect work will result; a dollar saved in trying to get along with run-down clothing resulting in hundred fold damage to the stock treated by it, clearly showing the wrong policy as practiced in some mills to cut down the overseer with reference to supplies needed for his room below what is in the own interest of the mill; both, production and quality of work produced, suffering by it.

Carding certainly is the back bone of success to any woolen mill, since upon it production and quality of product of the mill depends, the process being at its height of perfection when yarn is produced with as little damage to the fibre as possible and the yarn as spun from the roving smooth and of a uniform count throughout the entire lot.

The "breast" is an attachment for breaker cards, i. e., the first carding engine of the set, the breast acting as a powerful advance card to the stock before the same reaches the first breaker carding engine. The speed of the breast is considerably less (about one-fourth) than that of the main cylinder of the breaker carding engine, hence the former will gently loosen the locks of wool before they come in contact with the quick revolving main cylinder of the card proper, thus preventing breakage of the fibre, which otherwise is always more or less inevitable. This loosening of the stock, i. e., bunches and locks of wool, by means of a breast, at the beginning of the carding process, prepares the stock for permitting the main cylinder of the carding engine to do its work to the best of its ability; also permits a closer setting of the workers at the carding engine, in turn producing a film well carded, and which will greatly assist in the production of perfect roving on the finisher and finally perfect yarn when spun. When a carder notices the first breaker to produce a perfect film, i. e., drawing, he always feels confident of being able to produce perfect roving.

A burring attachment is frequently provided either to the common feeding arrangement to the breaker card, or to the breast, provided such is used, the object of this burring attachment being to take out any burrs, shives adhering to the wool fibres in the lot under operation, said burring attachment consisting of a burr cylinder and a beater guard, also known as its stripper, for the reason that the object of said roller is to strip any burrs, etc., from the wool as taken up by the burr cylinder. The stripper or beater guard is placed on top of the burr cylinder and its direction of rotation is in opposition to the motion of the burr cylinder, the knives of the stripper being set close to the points of the clothing of the burr cylinder and when all impurities in the wool and of sufficient size will be caught by the knives of the stripper, i. e., beater, and thrown out of the material into a suitably situated dirt box. In place of the stripper roller or beater guard, stationary guard knives have been used, placed below the burring cylinder in an oblique position towards its motion, being set sufficiently close to the clothing of the burr cylinder to throw out the impurities found in the stock.

Whether feeding the breaker card by means of feed rolls with or without a burring attachment, or by means of a breast, the material in turn is taken up by the licker-in from which in turn it is taken off by the main cylinder of the carding engine. Licker-in and main cylinder turn in opposite direction, viz: the first from right to left and the other from left to right. The bend of the teeth is also in the opposite direction, consequently permitting the stripping of the licker-in by the main cylinder at their point of contact. The clothing of the main cylinder has many more wire points than that of the licker-in, for the reason that, after the wool is delivered from the licker-in to the main cylinder, the fibres are more individually to contend with, the locks and bunches of wool then being more opened partially.

The "fancy" must clear all the point of the main cylinder, so that the wool can be opened without fracturing the fibre or rolling up the material, what in turn explains that the fancy must have fewer points than there are in the main cylinder, which he then can clear with greater ease and speed. Provided the fancy is running at too high a speed and besides has too many points, the stock will then be thrown out of the sides of the card or a part into the middle; resulting in turn in an uneven film. The same will be the result, provided the fancy is not near enough, since then the card is not clear and cannot hold the wool and when the draft caused by the speed of the card will throw out the material.

Be sure that every stripper strips clear and even, since there will be more delivery on the side that is stripped than on that not stripped. Variations in yarn may be also caused by stripping the ring doffers too heavy, for which reason strip them as easily as possible in order to prevent uneven rings. A ring doffer with a good clean face, if well up, will run very near the main cylinder of the finisher card and produce a good even roving. Finisher cards have either two or three ring doffers or as they are called doffer condensers. If in connection with a two doffer condenser the upper ring doffer will deliver a heavier roving strand as compared to the lower ring doffer, then the upper must be regulated to strip easier, and vice versa. Take the weight of top and bottom rovings at least once a day, and strip both doffers equally. If then you find the roving to vary between them, regulate the affair. The same principle as thus explained in connection with the two doffer system also applies in its principle to the three doffer system, and for which in connection with fine work, production without impairing quality is claimed, permitting a large number of ends to be taken off by means of narrow rings without the danger of the roving catching together as it passes through the condenser, the space between the rings being nearly double that in which but two doffers are employed. The arrangement of the rub-motion in both the two and three doffer condenser is such as to enable the carder to change the speed of either doffer and set of rolls without reference to the other.

Some mills on particular work keep the roving of one deck of the condenser separate from that of the other, keeping up this feature throughout the spinning and weave room, their claim being that the top doffer has a tendency to reach proportionally more of the longer fibres from the cylinder.

With reference to the feeding of the three carding engines, the stock as coming from the picker room is fed to the breaker card by automatic card feeds.

The Bramwell feed in its main features consists of the feed box for holding a supply of material to be fed to the breaker card, this feed box having a grating at its bottom for permitting any loose impurities, still adhering to the wool, to drop out and in turn be removed, as the case may require, by the attendant. Situated near the front end of the feed box and extending its entire length, is an elevating spiked apron to which the material in the feed box naturally adheres and in turn is taken up by it and out of the feed box. Near the top of the hopper and sufficiently near to the elevating apron, a reciprocating comb is placed, the same having a slow, long sweep in front of the elevating apron, being placed there for the purpose to brush off and back into the feed box any surplus amount of material adhering to the

spiked elevating apron, a feature which naturally will result in regulating an even distribution of the material on the elevating apron and consequently produce an even feed of stock from the box to the delivery feed apron of the machine. The material adhering to the spiked elevating apron in turn is carried by the latter over its top roller, coming there in contact with another, but shorter apron, running at higher speed, being also provided with flexible leather strips for brushing the material off from the teeth of the elevating apron and in turn convey it into the trough of the feed, which in this instance is used as a scale to weigh the material delivered to it, and after the correct amount has thus been delivered, at intervals then deliver it to the delivery apron of the feed which in turn then feeds the material to the feed rolls of the breaker card.

This trough for holding the material delivered to it from the feed box, until the proper amount is collected, is formed of two covered wings held in close position for forming the trough by suitable weights, the mechanism of this scale arrangement being suspended on steel knife edges and balanced with movable weights, in order to permit a heavier or lighter feed of amount of material to the trough and consequently a heavier and lighter feed of material to the delivery apron of the feed, i. e., feeding apron of the carding engine. After the proper amount of material has been deposited in this trough, i. e., an amount sufficient to overbalance the weight, the wings of the trough then open, in turn emptying the material in the trough on the endless delivery apron of the feed, i. e., feeding apron of the card. As soon as the trough has received the proper amount of material and shortly before its wings open, i. e., when the scale of the feed has received the proper amount of material to deliver to its delivery apron, a small trigger is automatically liberated, in turn causing a projection of the operating mechanism of the feed to catch on one of the teeth of a revolving disk connected with an automatic clutch, disengaging the driving mechanism of the spiked elevating apron and consequently temporarily stop any further delivery of the stock to the trough of the scale, which then remains temporarily at rest, i. e., closed until the delivery apron of the feed has traveled sufficient to permit the next supply of material, after being weighed by the scales, to fall in its proper places on said apron, and when in its proper time before this is required, the spiked apron in the feed box is automatically started, to again deliver material in the trough of the scale of the feed.

In the Fisher feed the stock, after being placed in the feed box, is kept pressed against a spike transfer roller by means of a pressure board which exerts the required pressure from a spring through an arm, both being situated near the top of the feed box. Besides pressing the stock against the transfer roller, the pressure board also produces an even feed of material from the feed box at all times, i. e., whether the feed box is full, half full, or only partly full, by means of its connection to the driving mechanism of said transfer roller, which may be driven at two speeds by throwing either of two gears into action through a clutch.

The pressure board controls this clutch through a lever, and when the supply of material in the feed box is low, said pressure board is then in a forward position, which causes the large gear of the clutch arrangement to be thrown in and thus drive the transfer roller faster. When in turn the feed box is full, the clutch puts the small gear in working contact and thus drives the transfer roller at a slower speed.

Above this transfer roller is hung an opening comb, provided with teeth, said comb being oscillated to and fro, for the purpose of evening off the material on the transfer roller. This comb has four adjustments, up and down, backward and forward, and consequently can be set to suit any grade of stock under operation. By this we mean, if short stock is to be fed, the comb should not be set too low, in order so as not to push the stock back in the feed box and strip the transfer roller.

When using long stock, the comb must be lowered far enough so as to strip the cylinder sufficiently to prevent the stock from being brought around faster than required.

As the material is carried around on the

transfer roller, it is next engaged by a doffer comb, which is vibrated through suitable gearing. The opening comb, previously referred to, also receives its oscillation from that mechanism through a lever. The material is thus removed in small quantities from the transfer roller, said material dropping down onto a curved plate where it is engaged by revolving blades and in turn deposited by them between a compressor board and an endless delivery apron. The revolving blades, previously referred to, also control the feed by automatically stopping the revolutions of the transfer roller when sufficient stock is in the receiving chamber to make the lap heavy enough. The transfer roller is driven from a worm with a clutch arrangement, which is thrown out through levers from the revolving blades when sufficient stock has been fed.

As the stock is taken away by the delivery apron, the worm previously referred to is returned into working position with the gear on the transfer roller and is not again revolved until sufficient stock is fed to the receiving chamber, assuring an even feed at all times, no matter how much stock there may be in the feed box.

Previously we referred to breasts, i. e., burring machines, as in some instances attached to the breaker carding engine, for which reason the accompanying illustration, Fig. 2, of such a burring machine is given, the same being of French origin. In said illustration, numeral of reference 1 indicates the endless delivery apron of a self-feed, or the feeding apron to the breast, i. e., breaker carding engine. 2 and 3 are entering, i. e., the feed rollers for the stock to the carding roller, 4, and bring it into contact with the first burring roller, which in turn will knock out any burrs adhering to the stock under operation, and which from carding roller 4 is then taken up by carding roller 5 and travels around this roller and is then seized by the upper carding roller 6. In machines hitherto in use, the track of the wool is generally in the reverse direction to that indicated by the arrows on rolls 4, 5 and 6 of the illustration. The carding rolls 7, 8, 9 and 10, placed above the upper roller, 6, further operate on the wool, return it and prepare it in thin layers. The rolls 4 to 13 inclusive, also the roll 15 and the main cylinder or swift, 16, of the breaker carding engine are furnished with card clothing, the teeth of which extend in position shown in the illustration.

The preliminary burring and opening of bunches and locks of the wool having been completed by the rolls 4 to 10, the material is seized by the roll, 11, which transmits it to the carding roll, proper, 12. A revolving brush, 13, of the usual construction, spreads out the fibres upon this carding roller, 12, levels them uniformly and thus facilitates their drawing out, and ensures their forward motion. The carding roll, 12, is provided as usual with a toothed surface, and the burring

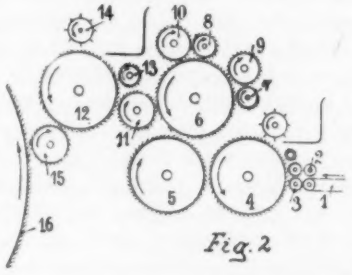


Fig. 2

roll, 14, completes the operation of the extraction of chips, fragments of shives, straws and other foreign bodies. Another roll, 15, then transfers the wool from the carding roll, 12, and passes it on to the main cylinder, 16, of the breaker carding engine.

In connection with the breaker cards, lately an attachment has been devised for preparing the stock (such as require no burring) previously to feeding it to said breaker card, the affair referring to what we can term a special carding of the stock previously to feeding the latter to the breaker carding engine. The advantages claimed for this attachment are that on account of feeding the material in a better condition to the breaker card, more stock can be handled by the latter in a given time and this at the same time with an improved quality of carded film. The increase in production to the carding engine in this instance is the result from the accelerated speed at which the latter can be run, the improvement in quality of resulting film being obtained by feeding the material in a more open condition to the card, i. e.,

any lumps or locks in the material having been open by the attachment previously to said material coming in contact with the main cylinder of the card. In order to explain the attachment to the reader, the accompanying illustration is given and in which rollers indicated by numerals of reference, 1 and 2, show the customary two feet rolls and to which the material is fed by means of the endless feed apron, i. e., endless delivery apron of the Bramwell or the Fisher feed. After passing this pair of feed rolls of the attachment, the material is taken up by the transfer roller, 3, and by it delivered on to the tumbler, 4, which then delivers it to an auxiliary cylinder, 5, running at a much higher surface speed than tumbler, 4. Cylinder, 5, in turn delivers the material on to the rapidly revolving main cylinder, 7, when it receives the usual treatment. As will be readily understood, by the time the material has passed through the attachment, thus described, i. e., when it reaches the main cylinder, 7, of the breaker card, any knots, lumps or locks in the wool have been pretty thoroughly opened, besides the fibres have been more or less evenly distributed into a film already, the material thus being in a better condition for being handled by the carding engine proper, than if fed to it direct.

Rollers 8 and 9 are two workers provided for splitting the web twice between the tumbler, 4, and feeder, 6; worker, 8, taking the film or a portion of it from cylinder, 5, and returning it to the tumbler, 4, which in turn delivers it again to cylinder, 5; worker, 9, taking the web from cylinder, 5, and delivering it to the feeder, 6, which then delivers the united splits to the main cylinder, 7.

The slow running workers, 8 and 9, operating with the comparatively fast running rollers, 4, 5, and 6, augment the effectiveness of the latter and enhance the efficiency of the feed. Heavy dotted line, 10, indicates the course of the material, through the attachment. Numerals of reference, 11 and 12, indicate the positions of the first worker and its stripper, respectively, of the carding engine proper.

We next come to the "intermediate feeds," the object of which is to make connection between the carding engines composing the set of cards, i. e., between the first breaker and the intermediate card and in turn between the latter and the finisher card.

The most frequently met with system used

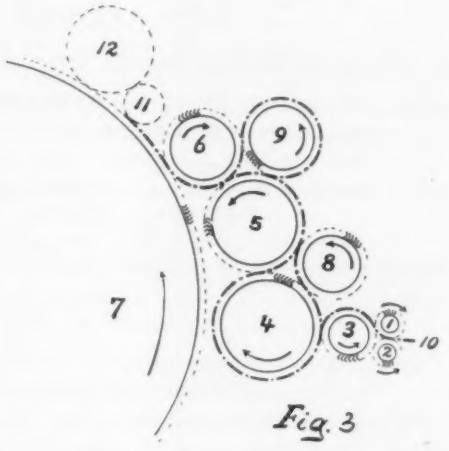


Fig. 3

is side drawing, and which is done either by means of balls and creel-feed or by a continuous feed, and of which there are several kinds.

Large numbers of children are employed in the textile mills of Austria at wages from 20 to 25 cents a day. The wages of women average about 40 cents a day and of men about 75 cents a day for skilled operatives, and from five to ten years are required to become a mule spinner at 80 cents a day. The working day is from ten to eleven hours.

According to a recent consular report the number of cotton factories proper in Austria-Hungary aggregate 130, with a great number of small establishments employing from 5 to 100 persons. Statistics show that the proportion of male employes in the spinning mills is 48 per cent. and the female employes 52 per cent.; in the weaving mills, male employes 40 per cent. and female employes 60 per cent. An equal division of the total amount of wages paid in the cotton spinning and weaving mills of the kingdom during one year would give each employe $116.75.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

GRINDING AND SETTING WOOLEN AND WORSTED CLOTH SHEARS.

BY E. THEWLIS, of Thewlis, Jagger & Co., Huddersfield, England.

(A paper read before the Textile Society of the Huddersfield Technical College.)

(Continued from June.)

I wish now to point out the most common faults I have met with in a long experience among cutting machines. The most common fault, and the one most dangerous as regards damaging the cloth, is having the cylinder too far forward on the blade. I have already explained that 3/32 inch is the correct place, but I very often find the cylinder much farther forward than this. The safe rule is to take a coin and hold it flat underneath the blade. If the spiral cutters touch this coin the cylinder is too far forward, and being so there is constant danger of the cloth being damaged by being caught up and taken in between the cutters and blade; also there is a great liability to what is termed "topping" the cloth. Another fault, but not so common as the other, is to get the cylinder back too far. The blade is then so weak on the cutting edge that a hard knot or bad list will cause the blade to snip. Another very common fault is not having the cylinder true and straight. Many finishers think the cylinder ought not to be ground every time the machine is out for grinding. The only right way to do is to grind the cylinder every time the blade is ground. How is it possible to have a perfectly even thickness of blade, no matter how truly the blade is packed, if the cylinder is not perfectly straight? When a solid bed, that is a cast-iron bed, planed true, is used it is absolutely necessary to grind the cylinder every time. I have often examined machines that would not cut evenly, and found the only fault was the cylinder not being true.

Before the cutting part is taken to the machine turn each tail pin adjusting screw 1/4 of a round to send the cylinder forward. This takes off the friction, and makes the machine run easily.

SETTING.

Setting, or adjusting, the cutting part to the position it should occupy in relation to the bed is a very important point, both with regard to quality of work and quantity, and also the loss by damages to the cloth. There are several different kinds of beds used on machines for cutting woolen and worsted cloths, and I will take them one at a time, and explain their good or bad points, for what purpose they are generally used, and the position the blade should be placed in to do the most satisfactory work. The first I will take is the one most commonly used, that is the

SPRING BED.

This bed is made of steel, and is tempered nearly as hard as a spring. The shape is shown at Fig. 1, and is often called a "fender" bed. The reason this bed is so much used is because it can be bent or sprung up or down to allow for any inequality the grinding may have left; or if the blade should be worn thinner in one place than another the bed can be sprung down to allow for it. An important point to notice about this bed is its shape at the point over which the cloth runs while being cut. They are not often quite a sharp angle, as shown at Fig. 2, but are usually more or less rounded, or, to use the name best known in the trade, "duck-billed." If the bed edge is a sharp angle, for thin goods, 1/32 inch, or the thickness of a 3d. piece, is a sufficient distance for the edge of the blade to be fixed behind the edge of the bed. This rule should always be remem-

bered: the thicker the cloth the further back must the blade be fixed. I said for thin goods 1/32 inch is sufficient. By thin goods, I mean such as 12 or 14 oz. to the yard (broad width). For medium cloth the thickness of a sixpence is required, and for heavy cloth the thickness of a penny is little enough. If the edge of the bed is rounded, this distance must be increased a little.

The further back the blade is fixed the more is the cutting part on the cloth and the closer can the cut be made. When too far back there is great danger of cutting too much off or topping the cloth. If a careful man is minding the machine the blade may be set well back; but very often I find young men minding the machines who are not always careful to notice whether the cloth is a hard or a soft make. If the blade is well back, and the cloth is anything like a soft

FIG. 1.

FIG 2.

make, the piece is damaged directly. Only a few days ago I was asked to look at a machine to see if it was all right. I found the blade too far back, and told the employer the machine was in danger of "topping" the cloth. He then told me that was just why he asked me to look at it. They had had several pieces spoiled by being cut too close, and they could not account for it.

The height of the blade stock at the back is also a matter of importance. The blade should always be at such an angle that the cylinder does not touch the cloth, that is, with the back set at such a height that when a piece of writing paper is drawn across the machine between the blade and bed over the cloth the paper shall just escape the cutters on the cylinder. In all except "hollow beds" it should be possible to draw a piece of paper across the machine in this way. If the cylinder cutters touch the cloth damage will frequently result; there will be more knot holes, as the very slightest knot will make a hole, which would probably go through the machine without damage if set lower at the back; and there is also a danger of the cloth being caught and taken round the cylinder, should the tension become easy. If the blade is ground too thick on the edge it cannot cut close enough without getting too far back and pressing too heavily on the cloth, so my advice as to cutting on a spring bed can be summed up in these little rules:—

A thin edge on the blade.

The cylinder not too far forward.

The blade edge not too far back from the bed edge, and the blade stock not too high up at the back.

SOLID BED.

A solid bed is made of cast-iron, and is planed true on the edge. No springing can be done on this bed like the other. When the machine maker has made the bed edge true it cannot be altered, and until worn uneven by the cloth will always remain perfectly true. It will be readily seen that the blade and cylinder must be also perfectly true if good work is to be done on this machine. For this reason many finishers do not like the solid bed for any work that requires close cutting, but I know some firms who shear fancy worsteds on them. For heavy woolens and beavers, meltons, and similar kind of work, I think they are by far the best bed that can be used; but the finisher must be a good grinder to keep them right. The setting of the blade for these beds is the same as for spring beds, and the same rules will apply; but the class of work usually done on them does not require so thin an edge on the blade as on the other I have previously mentioned. When cutting cloth that has the wool left on the face like a beaver finish, it is certainly safer to have a good thick edge on the blade.

MARTIN'S PATENT OR RUBBER BED.

These beds are much used now in the worsted trade, as cloth can be cut on them without the knots having been first cut off. They are very good for any cloth which has an uneven back, as the rubber tube gives

way under any little inequality on the under side of the cloth. They would be used more if the grinding and setting of the cutting part was better understood by those who have charge of the machines. As I have before stated, there is a very common fault among finishers of having the cylinder too far forward on the blade. With these beds, that fault is fatal to their success. The cylinder catches the cloth and draws it in, and piece after piece is damaged, until the bed is thrown out as a failure. For these beds the cylinder must be set only 1/16 inch in front of the blade, and the blade ground to a fine edge. The best position for setting the blade is as follows: The groove in the iron in which the rubber lies is 3/8 inch wide. The blade edge should be put exactly 5/16 inch behind the front edge of this groove, that is 1/8 inch further back than the centre. Care should be taken to see that the blade stock is so low down at the back that when a paper is drawn across the cloth (as I showed before with the spring bed) the cutters are not touched. If the blade is set exactly in this position, the cloth can be cut as clean as desired, and there will be no knot holes. Those finishers who have once mastered the grinding and setting for these beds are very well satisfied with them; but I have known many tried and taken out again as a failure, because the finisher has not seen the danger of having the cylinder too far forward on the blade.

HOLLOW BEDS.

These beds are simply a broad groove, over which the cloth is stretched tight, and the cutting part operates on the cloth over the groove. These are used for the same purpose as the rubber bed, but are not good for very close cutting. For cloth that is not cut very close they are very good indeed. They require very little attention, a lad can mind one; they cannot cut a knot hole, no matter how big a knot is under the cloth; and their cost is very small compared with the rubber bed. The cutting part must be ground for the blade to have a thin edge; the cylinder must not be more than 1/16 inch forward. The setting of the cutting part is much different for these beds. The blade must be set so far back from the front edge as to allow the cylinder to clear the edge 1/8 inch and the thickness of the cloth also. The blade stock is bound to be high up at the back to allow the cloth room to pass underneath. In setting see that both ends are alike, and the cylinder does not touch the cloth as it comes over the front edge.

"NEW" FIBRE PROCESSES.

BY CHAS. RICHARDS DODGE.

In Queensland someone has "discovered" that there is a fibre in the leaves of the pine-apple plant "which may be used in the production of a useful kind of silky cloth." The fibre has been "simply" obtained by soaking the leaves in water until the outer covering can be easily removed and the soft, jelly-like substances around the fibre pressed away. The Queensland writer suggests that if "some new kind of silky material" can be obtained, it will produce no amount of wealth, and pine-apple silk may become the fashion.

This is extremely interesting, but unfortunately for the "discovery," pine-apple fibre is nothing new. The beautiful and expensive pina cloth of the Philippines is a very old story, and needs no description on these pages. Pine-apple fibre was experimented with in India as far back as 1836, and a bag made from the cloth was exhibited at the Agricultural Society, while the Chinese have been making the cloth farther back than there are records. The manufacture of pine-apple cloth, therefore, in all Eastern countries has long been practiced, though the fibre has been extracted by laborious hand methods, one leaf at a time. And in the past it was the custom to form a continuous "yarn" by knotting together the ends of the individual filaments, as extracted, in lieu of spinning.

In my own experiments in Florida, fourteen years ago, it was fully demonstrated that while the fibre can be extracted by machinery, the low percentage of fibre which the leaves contain would prevent the industry from becoming a commercial success. In one experiment, in which the small Van

Buren machine was used, about 1,000 pounds of leaves yielded about 25 pounds of dry fibre, or about 55 pounds to the ton of freshly cut leaves. In another experiment, with 1,000 pounds of leaves of another variety of plant, the yield was 18 pounds and 2 ounces of fibre, or a little over 40 pounds to the ton of leaves. As average leaves will run ten to the pound, there would be over 22,000 leaves to the ton; and this great number of leaves would have to be taken from the plants in the field by cutting, handled several times, and finally passed through the machine, and in the end but 40 to 60 pounds of fibre would be obtained, and 50 would be nearer the mark, under most favorable conditions, for in working so delicate a fibre the waste is excessive. The larger and heavier leaves, as a rule, yield a lower percentage of fibre than the thinner leaves, and the same holds good in the extraction of sisal hemp.

But the fibre is all that has ever been claimed for it, and could it be extracted cheaply, and without injury, it would find ready employment in the manufacture of fabrics, such as dress goods, which would be as rich and as beautiful as silk, though the fibre could never take the place of that brilliant textile. The Florida fibre produced in my experiments when simply plunged into cold water, from the machine, and dried in the sun, came out almost white, and with a fineness and softness unequaled by any other fibre that I have extracted.

POWER REQUIRED FOR WOOLEN MACHINERY.

Herr Neimke, a woolen mill superintendent of Forst, Lausitz, Germany, gives in the "Berlin Textil Zeitung" a statement of the power required for different woolen machines. The data was obtained in a mill driven by electric power. Tests of the garnett machines showed that there was a large waste of power when the machines were not worked to their full capacity. With all the garnett machines working 25 h. p. was consumed with 20.9 kilo watts, or .836 per h. p.; with a three-quarter load (18 3/4 h. p.) each horse power required .885 kilo watts; with one-half load (12 1/2 h. p.) each horse power required .886 kilo watts; with one-quarter load (6 1/4 h. p.) each horse power required 1.008 kilo watts.

In testing the various machines .85 kilo watts was taken as the equivalent of 1 h. p., as the motors were not driven to their full capacity. The test of five garnett machines resulted as follows:

(a) electric motor without belts,	1.88 h. p.
(b) shafting,	1.65 h. p.
(c) 72-inch garnett machine working shoddy,	4.12 h. p.
(d) 80-inch garnett machine on felted stock,	7.75 h. p.
(e) 74-inch garnett machine on shoddy,	3.18 h. p.
(f) 74-inch garnett machine on thibet stock,	4.12 h. p.
(g) 80-inch garnett machine with 2 doffers on shoddy,	4.7 h. p.
Total,	27.4 h. p.

The total indicated h. p. was 2.4 h. p. above the capacity of the motor.

The shoddy picker had a cylinder 14 1/2 inches wide and 25 inches in diameter, running 60 r. p. m. The indicator showed that 1 h. p. required .858 kilo watts. The power used was as follows:

(a) the motor running empty,	2.1 h. p.
(b) for the belting on the loose pulley,	.1 h. p.
(c) the machine on thibet material,	4.3 h. p.
Total,	6.5 h. p.

The record showed that the power consumed by the shoddy picker varied between 4.5 and 10.3 h. p.

The test of a twister and a loom was made with the motor fastened to the wall by brackets and indicating 5 h. p. when running 1,250 r. p. m. with .88 kilo watts per horse power. The shafting was driven by belting. The power consumed was indicated as follows:

(a) the motor running empty,	.74 h. p.
(b) shafting, but without belts on the looms,	.52 h. p.

(c) the loom belts,	.18 h. p.
(d) 60-spindle twister,	1.1 h. p.
(e) 8-harness 4-box loom,	.46 h. p.
(f) 14-harness 3-box loom,	.42 h. p.
(g) 8-harness 5-box loom,	.42 h. p.
(h) 8-harness 4-box loom,	.44 h. p.
Total,	4.3 h. p.

The loom was run 78 picks per minute weaving a 6/4 kersey. Readings were taken every quarter minute for the test of the shoddy pickers; for the other machines every half minute, and the average of these calculated.

ENGLISH NOTES.

(By Our Special Correspondent.)

It is long since the trade in rubberized fabrics was so brisk in this country, many orders being, apparently, for abroad. Cloths are woven wide for this purpose and large quantities of 60 to 64-inch cotton drills, worsted paramattas and worsteds with singles warps are passing. Handling worsted cloths has got dyers into trouble because of the difficulty of eradicating grease from these goods. The customary tolerance of the mackintosh makers is 1.6 per cent. of fat in the fabric and to reduce the proportion below that limit is the difficulty. Three per cent. is found with distressing frequency despite soap and alkali, warm water and prolonged "dollying."

In some cases the mischief has been traced to that old foe, the wax-rod. To strengthen singles warps two rods or rollers of paraffin-wax have been used, the warp passing between them. Owing to the width of the fabric four rods have been made necessary and where these have overlapped a heavy bar of wax-marking has disfigured the centre of the piece from end to end. Fat of this kind is not saponifiable and in cases the wax has had to be removed with benzine at a cost reaching 8 cents a yard. Superfluous to say that regular dyeing prices make no provision for this contingency. Indeed the whole business in these goods is done on slender margins.

A branch of the waterproof trade which is not inconsiderable is the supply of cotton-duck, made impervious to water, for use in covering meat in transit. We who import chilled beef in shiploads have need of waterproof sheeting which will not contaminate the cargo as it goes off to cold-store. Tarpaulin is heavy and unpleasant and patent green canvas contains copper and is under suspicion of arsenic. A process totally unsuitable for wool goods has been devised by an English proofer who manages without discoloring the duck at all and without rubber, to make it impossible for one to squeeze water through the interstices.

A larger business induced by the import mutton trade is that in flimsy cotton sheeting used to shroud the carcases in ships' holds. Having served this purpose once the meat-cloths are washed and sold as sponge-cloths and dusters to users of machinery.

* * *

It is unusual to hear of ramie being preferred to cotton on the score of price. Yet the Welsbach gas mantle firms report a saving of $30,000 in the year through the substitution of this fiber. Reckoning that one pound of yarn makes 50 odd dozen of mantles, it is clear that these are in huge consumption. In spinning the yarn for them there are no fancy profits to be made and, expressed in weight, quantities look more modest than by number. The "violent fluctuation of cotton in late years" drove these makers to use ramie. In times past violent fluctuations in ramie have assisted to confirm users in their attachment to the old-established fibers.

* * *

In one quarter some headway is made with a cotton cloth, sensitized to light for use as "printing-out" paper by photographers. A plane surface is first obtained by dissolving cellulose from the fabric and precipitating it again upon the surface and then calendering the cloth. Then follows treatment with bichromate of potash, much as paper is treated. The photo print on cotton of course admits of rougher handling than paper and the material is desirable for plans.

Without the sensitizing process, but with

the addition of treatment to render the fabric somewhat waterproof, cloth of this sort is eligible for fine lithography. A good demand is expected from makers of maps and plans. Other uses for this surfaced cloth are sought and it is likely that it will be further elaborated.

* * *

While worsted spinners, as a rule, are making comfortable profits, producers of heavy woolens find it hard to make ends meet. This is from no want of orders, but purely because it is impossible to recover from cloth the very high prices paid for low stock of all kinds. In normal times makers of the cheap woolens in which heavy weight is an essential have contrived to substitute one sort of stock for another when material advanced. Nothing cheap enough for the trade remains and—discouraged by the bad results of the last two or three years' trading—no less than seven old-established Yorkshire concerns are going out of business.

This plight is not peculiar to England. Sellers of shoddies and the like to protected countries in Europe complain that neither they nor their manufacturing customers can make profits. Failures of woolen firms have begun in northern Europe and there is real anxiety as to the general credit of the trade. Dealers compare notes carefully between themselves and proceed with caution. For the time being, makers of the sounder woolens are in better case than their usually fortunate rivals.

* * *

The wonder is that the gentry who invent new textile raw materials do not discover sea-weed, which is perhaps as promising as the peat, tree-cotton, paper and other fibres which make an occasional paragraph. Seaweed gives us sizing material and forms of it have replaced horse-hair for stuffings. The dressing and preservation of a feathery sort of weed found in the Thames estuary is a Continental light industry. The weed, when dyed and finished, comes in for table decoration and the trimming of hats and it sells cheaply in drapery stores.

* * *

Not a few of our West-end tailors freely admit that they live out of their American connections and some send their own salesmen to New York. The summer incursion of Americans disposes of a considerable quantity of fabrics at retail prices. In the Strand a tailor's window has appealed particularly to Americans and Canadians, with its prices in dollars and estimates of the cost of similar suits bought across the Atlantic. The largest of the London department stores will have every article in its windows ticketed in United States as well as English currency this season. Does the chance offer to sell American citizens American fabrics in London? English cloths follow English people to the Continental resorts, where the goods pose, sometimes, as native articles.

* * *

The casualty insurance tariff may be taken to reflect the actuarial idea of risk of accident in cotton mills. Rates on weaving and ring-spinning employment are on a par and rates on mule-spinning three and one-half times as much. Respectively, the premiums are $1.80 and $3.60 per $500 of wages paid. They protect the employer from his liability to pay half-wages during disablement of the worker, or a sum calculated on the basis of three years' earnings, upon the death from factory accident of one who leaves dependents behind. The federated cotton spinners do not accept this estimate and are formulating a mutual scheme of accident insurance.

Compensation becomes payable now in certain cases of occupational disease. The woolsorter who contracts anthrax, the dyer who is ulcerated by chrome, the finisher who is affected by arsenic or lead, not to mention workmen preparing certain tar-colors or turners of African boxwood to make shuttles, are placed the same in respect of compensation as if they had been injured by machines.

* * *

Hitherto, cotton spinners in England have stoutly declined to accept any set standard for moisture in yarn. With what some agree others violently disagree and the only inference open is that the trade is determined to reserve a certain latitude. Each spinner "conditions" his own yarn to his own degree and this want of uniformity has worked rea-

sonably well. But if there is no trade standard there is an academic standard. At the testing-house of the Manchester Chamber of Commerce a proportion of 7.8 per cent. of moisture is regarded as the natural allowance of water. The Bradford Conditioning House, which deals more with warps than cops, asserts a standard of 8 1/2 per cent.

In his desire to be moderate, Special Agent Wm. Whittam, Jr., puts the average of moisture in Manchester yarn at 6 per cent. Expert witnesses called before the Oldham court say that 8 per cent. is admissible. A fraction less or more attracts no special attention, but a law-suit has grown out of a delivery of yarn conveying 11 per cent. The yarn had mildewed and provoked complaints from weavers and his Honor found that 11 per cent. was excessive to the extent of 3 per cent. The judgment is likely to be the subject of appeal, so that there is a chance that Lancashire spinners will be saddled against their will with a standard for moisture.

As exact investigation is seldom made, one may think what he likes of the 6 per cent. average which Mr. Whittam accepts. Our spinners look well after themselves; for a long time they have been able to take an independent line with customers, and it is perhaps not probable that they have often undershot this semi-legal limit by 2 per cent. At all events one of them has not been so self-denying, if all the others have played fair.

It is not only cotton spinners who condition their yarn by storing it in cellars for a night on floors of moist bricks, and they are not alone in maintaining that the natural standard is that which does full justice to the material and is acceptable to the customer. If this agrees with the conventional 18 1/4 per cent. for worsted and 11 per cent. for silk, so much the better. They desire a free hand and dislike the idea of working to a standard which is not so fair in some cases as in others.

The value of German exports to Canada decreased from 38 million marks in 1902 to 21 million marks in 1905.

THE MANUFACTURE OF HORSEHAIR IN ENGLAND.

BY JOHN MACKIE

Although the horsehair industry is not an extensive one, and those engaged in the trade require a long and careful training, most of the firms preparing horsehair are in a flourishing condition.

The horsehair that comes through home sources is collected by the small general dealers, or marine store dealers, from the carters and stablemen, who save the combings from the manes and tails of the horses under their care, and which they roll up into a spherical tangled mass and carefully preserve until they have enough to sell to the dealer when he pays his periodical visits. Few people examining the disordered tangle of hair would ever believe that it was of any commercial value, or that any process of manufacture could render it sufficiently serviceable for the loom and for the other purposes to which it is adapted. There is a shorter and less valuable hair which comes from the tanner, and which is cut from the tails and manes of dead horses. This hair is usually very dirty and often damaged to some extent by acids and lime, and it is seldom that it is long enough for weaving purposes.

The most valuable long weaving hair comes from Siberia, and is bought by brokers who attend the half yearly fair held at Nishni Novgorod in Russia, where the Siberian hair is offered for sale; they in turn sell to the manufacturers in this country.

This hair is neatly bunched in small locks and is comparatively straight in comparison to the English-gathered hair, and is worth from 35 to 50 cents a pound, according to market fluctuations. English-gathered hair is worth about 25 cents a pound at the mills, but all long hair would fetch about 35 cents a pound.

A good deal of long hair comes from South America, but, though this is usually a little longer than the Siberian tails, it is not quite so valuable on account of the brittle nature of the points of the hair, which have a tendency to break when woven and to leave uncomfortable points sticking up through the

haircloth, making it undesirable to sit upon.

China furnishes a good deal of weaving hair, but this hair is short, although of a good black and well suited for making brushes. Some long hair comes from Italy, and from the Argentine Republic there is a considerable quantity of short tails with a portion of the stump of the tail left on. This stump detracts from the value of the hair.

The first process of manufacture is drawing by means of cards, which consist of rows of long steel pins stuck through thick pieces of wood securely fastened to a bench. Through these pins the locks are drawn until the loose, short hairs are combed out and the hair becomes fairly smooth and straight. To facilitate the process of hackling, the hair is steeped for a day or two in water to loosen the natural grease clinging to it and to render the hair more elastic and less liable to break when drawn through the combs. When the hair has been hackled and dried it is tied into bundles and placed between smaller cards to be drawn out into bunches of the same length.

The drawer sits at his bench with the cards of hair in front of him, and with an old knife or razor, gradually draws out a few hairs at a time. When he has a handful, he knocks all the points up level with a small wooden bat and shears all the loose points off, tying the lock round about two inches from the end. When all the hair is drawn through the cards, the level ends are put into the cards again, the butts facing the drawer, who commences to draw these out in the same way as before, so when he gets a handful it is found to be level at both ends and the lock is ready for weaving or dyeing.

Hair over twenty inches long is used for weaving; shorter grades are used for the manufacture of brushes. The drafts, as the short hair is called, taper down from twenty inches to about five or six inches, and are sold according to the length, such as 18/19 inches, 15/18 inches, etc. When it is not long enough for brushes it is used for mattresses and stuffing for furniture. The short hairs that fall out in the curling process are of no use except for manure, but in this capacity it is very much sought after, especially for root growing, in which respect it has few equals.

Woven hair cloth is used for covering for chairs, sofas, railway carriages, etc. As the hair ranges in length from twenty to forty inches, a continuous thread cannot be obtained to make into warps, nor to weave as weft by means of shuttles such as are employed in weaving wool, cotton, linen, etc. As a matter of fact, the hair forms only the weft section of the hair cloth, the warp being of linen, dyed black, and very highly sized and finished, so as to make it weave well and give the fabric a smart appearance. By using the sateen weave, the hair completely covers the linen warp, and gives the fabric a lustrous appearance, making an excellent wearing material for seats. After burling and sewing the woven cloth is finished by rubbing with velvet to clean off any grease and to give it a polish; when pressed the goods are ready for market.

The contrivance for drawing the hair through the warp in the absence of the shuttle, which is an obvious impossibility, is a most ingenious one. This arrangement consists of a long lath-like stick resembling a yardstick, with a hook on one end; this is forced through the warp threads, the end of the hair weft hitched to the hook and the hair drawn through.

At the side of the loom is a clip, containing the two bunches of coarse and fine ends, and oscillating so that the picker dips into each bunch alternately. The picker consists of a pair of steel pins, which dip into the bunches and select a hair which they draw up and hold until the hook of the shuttle seizes it and draws it through the warp, and then releases by means of a catch arrangement. The pickers are so finely made that they have to be adjusted under the microscope; one of the pins having a tiny groove for the hair to fit into, and the other, a point to fit the groove. These pickers take only one hair at a time and if they fail to bring up a hair the first time they dip again. If the third attempt is a failure, the loom is stopped automatically and the weaver then knows that the clips require replenishing.

There is another grade of woven hair cloth,

used by tailors for padding coats, dresses, etc., that is not as closely woven as the seating cloth, but is composed of white or lavender cotton warp and a small number of picks per inch of hair; the weave is usually a four end twill or one of its derivatives.

Horsehair is also woven into sieve bottoms, but in this case the hair is used for both warp and weft, and only small squares can be made at one time. Hats are also made from woven hair.

Long hair is used largely by fishermen for making lines and nets, especially in Scotland, while brushes, soldier's plumes, wigs, etc., are responsible for the disposal of no small quantity of long hair.

The short hair that is not long enough to weave or for brushmakers' purposes, is first mixed with hog hair and cow tails, then put through a machine called a "devil" to open it and disentangle the hairs; it is then spun into loose strands and finally into a kind of rope. This rope is steeped in water, and baked in an oven to kill any impurities it may contain, and to set the curl that has been imparted to it. Then it is taken out of the oven and again opened by a carding or teasing machine, when it increases largely in bulk and is beautifully springy and elastic. This makes excellent material for stuffing, as it never loses its curly nature.

HOW TO ADVANCE IN A COTTON MILL

BY THOMAS BARR.

How can I learn the cotton mill business and become a successful superintendent is a question often asked, and the wish to help some young fellow toward the desired goal is the object of this letter. There are three separate ways to prepare one's self for the position of mill manager. The first may be called the office route. Here the young man of sixteen or so enters the office of a large manufacturing plant as office boy. He is sent into the mills many times a day to deliver messages and orders to the heads of the various departments and in his spare time is kept busy on routine work. If he has an aptitude for the business he will work up to the position of clerk or assistant paymaster, or confidential clerk to the mill agent. In all these various positions he will supplement his general idea of the departments that he picked up as office boy. Through the information gained from the weekly and monthly reports he becomes familiar with the cost of production in these departments, and knows how much finished material should be turned out each week. He also has some idea of the amount of seconds that are allowable, the waste in each department, and the total waste from the bale to the finished product. A course at an evening textile school, or with a correspondence school if the night school is not available will give him the theoretical side of the business. By the time he is twenty-five he is ready for his first position, and it would be better to take one with a large company where his work will be more along executive lines than with a smaller one where the work will be more detailed.

The second way is to enter a textile school immediately after graduating from the high school. Here he should take the complete course, which, giving special work to designing and dyeing, would take nearly five years. At the end of that time he should seek an opportunity to enter some large mill where he can apply the theoretical knowledge he has gained in the textile school to the actual work of the mill and also learn how to manage help. If he gives close attention to business at the end of six months he should be prepared to handle any proposition in the cotton mill line.

Not every young man can avail himself of either of these methods, but the third way is open to all who are willing to work hard and remember that there is always room at the top. This boy's father (it is not an imaginary case) worked in a mill and from the day he had shown the boy through a large cotton mill and patiently answered the boy's questions as to the purpose and meaning of each separate machine, the boy's one desire was to be in the cotton mill business. The first Monday after school closed for the summer vacation he was in the hand dressing department as a splitter. At that time the splitting of chains had to be done by hand and was a very particular task. If the bundles were the least bit out of shape they would cause a

very bad break while the chains were being dressed. So at the very beginning of his career he was impressed with the importance of careful work.

During his next two vacations he worked in the spooling department and as helper to the slasher tender. Next he was third hand in a large ring spinning room for one year and then accepted a position as second hand of spinning, spooling, warping and dressing, in a small mill in Massachusetts. On the advice of the overseer he purchased some books on cotton mill practices and studied them until he became well grounded in the fundamental rules of the carding, spinning and weaving processes. He also entered a night school and took a full commercial course. He had now been second hand for four years and might have been overseer of his department if he had wanted the place, but desiring to learn every branch of the cotton mill business, he began to look for a place in a card room, and soon began as a laborer in a picker room opening the cotton, oiling the shafting, etc., and so on through all the different branches of the card room, grinding the cards, fixing the frames, and finally was second hand for two years.

He then was overseer of the spinning, spooling and twisting department of a small yarn mill and had an opportunity to apply the practical knowledge he had galned. Here the first thing he noticed was the irregularity of the bobbins; one could almost tell by the looks of a bobbin what frame it came from; there were no two alike. Some had a short traverse; some had a long taper at both ends; some long at the top and short at the bottom and vice versa. This was the first thing he had to tackle and he soon had them all exactly alike. After three years as overseer in this mill in which he had attended strictly to business and had read carefully the best books he could secure and several trade publications, he secured a better position in a cloth mill as overseer of the spinning and spooling departments. Here he found the same trouble with uneven bobbins as at the other mill and after having the machines regulated and rings set he was able to run the frames fifteen minutes longer between doffing, which meant a saving of four dollars a day—not a small item in a large mill in the course of a year. After four years in this mill he obtained a position as superintendent of a yarn mill.

Right here it will be well to say to the young mill man: Don't stay in one mill or on one number of yarn, but move out and around. Have your note book handy and don't be afraid to ask questions, and don't think all the best places are taken. There will be more good places in the next ten years than can be filled by the available men.

JUTE FINISHING.

BY THOMAS WOODHOUSE, Dundee Technical Institute and THOMAS MILNE, Dunfermline Technical School.

The processes through which jute fabrics pass from the rough to the finished stage are few in number, yet many different kinds of finish are imparted to them and some of the machines used are of huge dimensions. The trade names for the principal types of finish are: 1. Calender Finish. 2. Chest Finish, and 3, Mangle Finish. These three embrace practically all the main forms, still many different degrees of finish obtain in each branch according to the class of cloth, and also to the particular requirements of the customer.

Practically all cloths undergo some form of inspection in order that any weaving defects may be remedied before the goods are delivered or passed to the finishing departments. Certain classes of goods are merely treated in the manner indicated, measured on the measuring machine, and then made up ready for forwarding. The greater part, however, has to undergo some form of finish, and the first operation after picking is that of cropping. Here the fabric may pass once or twice through the cropping machine in order that all loose fibres may be shorn off both surfaces. The amount of cropping naturally depends upon the smart effect which it is desired to give to the fabric. Many different kinds of croppers are in use, but their main difference lies in the number of so-called spirals with which they are provided, and the particular method of furnishing these. The spirals, driven by crossed and open belts, make about 1,100 revolutions

per minute, during which time the cloth passes in front of and close to them at the rate of eight to ten yards per minute, being pulled through the machine and delivered at the back by means of the pulling and delivery rollers. Each inch of cloth is therefore subjected to about 25 cuts from the eight spiral blades. Some machines are fitted with three, and some with four spiral cutters, hence more satisfactory work is performed. Different types of spiral blades are also fitted, some having plain sides, and others having right and left hand file cut sides, while Messrs. Rossell & Co., Ltd., Sheffield, supply a patent form of cutter provided with "overcut" sides—a combination of right and left hand file cutting. The makers claim that a double spiral machine fitted with these spirals will produce as good work as a quadruple machine fitted with the ordinary blades. Although cropping is in reality the first process, many cloths are taken direct from the loom to the damping machine.

All jute fabrics, with at least very few exceptions, are more or less damped previous to finishing. Jute, like other textile fibres, has a mechanical affinity for water, and the presence of added moisture in the fabric during the chesting and other finishing processes plays an important part in the ultimate firmness or crispness of the finished article. Cloth which has not been damped, or which has been allowed to lie too long in the damp before finishing, and so become comparatively dry again, has a tendency to be limp and flabby when finished. The length of time during which the pieces should remain in the damp condition will, of course, vary with the class of fabric, but sufficient time should be given to permit of the moisture penetrating the fabric uniformly. Six to eight hours' time may be sufficient for light and medium hessians, but heavy sackings require a longer interval, and a common and satisfactory practice for these is to damp them towards night, and then finish next day. The degree of moisture varies with the type of finish intended. An addition of about 5 per cent. to the weight of the cloth is found to be suitable for a wide range of fabrics, with perhaps one to two per cent. less in the case of goods for mangling or for any calender finish where little heat is used in the steam cylinder. Since the speed of a damping machine is constant, all goods are run through at the same rate; it is therefore obvious that some provision must be made for increasing or decreasing the amount of water added. This is provided in all machines, but where an extra heavy damp is required, a better and more uniform result is obtained by running the cloth through twice and regulating the moisture.

Damping machines are of two types—brush and spray; the former is the older type of machine. A brush damper consists essentially of two heavy pulling and delivery rollers for drawing the cloth rapidly through the machine; two revolving brushes situated one on each side of the path of the cloth and serving to throw the water on the latter as it passes through; two brass rollers rotating in water troughs and feeding the brushes; and a wooden shield or float box which may be raised or lowered at pleasure to protect the cloth from, or expose it more to the action of the brushes, and thus reduce or increase the quantity of moisture imparted. A continuous water supply is of course provided, and it is retained at a constant and predetermined level in the water trough by means of a float valve.

In a spray damper two perforated copper spray pipes are passed across the machine and connected to a supply pipe from a cistern with about 15 feet head of pressure. Each spray pipe is controlled by a valve by which the degree of dampness imparted may be regulated, while a further valve on the main supply pipe from the cistern is arranged to cut off and renew the flow with the starting and stopping of the machine. The passage of the cloth through the machine is so arranged that the vertical sprays act on opposite sides of the cloth. Pure water should always be used in the spray damper, otherwise the small perforations would be filled up, but the addition of deliquescent and weighting agents is sometimes resorted to where the brush method is in use.

The three elements essential to the production of a stiff, flat, and bright or glossy finish are heavy pressure, high temperature,

and a suitable degree of dampness in the cloth. The heat is required to remove the excess of moisture, and as this must be done rapidly the temperature must be high, while pressure must be employed to flatten out the individual threads of the fabric. Since the pressure and heat are applied in a simultaneous operation, the cloth retains the form or characteristics then imparted to it.

The Calender: The standard calender has five finishing bowls or rollers. Three bowl machines are sometimes used, but only for light to medium finishes. These bowls are supported in a suitable framework with their centres in the same vertical plane. The bottom roller is supported on heavy bearings, since it has to support the weight of the other four rollers as well as the pressure put on by weights and levers for the purpose of flattening. Roller No. 2 is termed the bottom "paper" bowl. Roller No. 3 is a cylinder and is heated by steam. Roller No. 4, or the top "paper" bowl, is similar to No. 2; while Roller No. 5 is similar to No. 1.

The calender attendant regulates the railing of the cloth according to requirements. The tensile strength of the cloth, the finish desired and the necessary amount of contraction in the width are all important factors in this operation. After emerging from the rails the cloth is passed between the rollers of the machine and delivered at the other side. Many degrees of this type of finish can be obtained by varying the method of entering the cloth between the rollers, and by increasing or decreasing the weights attached to the pressure levers. Moreover, the weights and levers may be caused to act in a negative direction by attaching the chain so that it may be wound on the drum in the opposite direction. In this way the pressure of the top roller is reduced. The lightest finish possible is therefore obtained in the manner indicated in diagram 1, Fig. 1, with the weights acting negatively. Little damp should be given to the cloth for this finish, as it is only slightly in touch with the hot cylinder. By an increase of weight, acting in a positive manner, heavier finishes may be obtained until method No. 2 is desirable. For this purpose the calender must be driven in the reverse direction to No. 1; this is possible, for all modern calenders are provided with reverse drives. The drive is usually by means of friction cones, is imparted by an open or crossed belt, and then through gearing to the steam-heated cylinder, the other rollers being driven by frictional contact.

For method No. 3, the normal drive is again used, and with this method of entering, and the employment of suitable weights, the heaviest calender finish is obtained. Sackings, baggings, and tarpaulings are usually treated to some type of calender finish. A few hessians are also similarly treated, but the bulk of this class is either chested or mangled. In ordinary chesting, the goods are entered as in diagram No. 3, but, during the process of finishing, are wound round the top roller, see diagram No. 4, the piece being thus continuously subjected to the pressure of the top roller and the weights during the whole time. When the whole piece has been wound on the top roller, the machine, with full weight on, continues to run for a short time during which the attendant rails the following piece. He then raises the top bowl clear of its neighbor by means of a separate drive which actuates the levers through a rack and pinion gear. The piece is then stripped from the bowl by a stripping roller at the back of the calender, the top bowl again lowered, and the next piece entered.

Chesting produces an excellent stiff finish provided that the cloth has been well damped and intense heat applied. Chesting on the top paper roller (see diagram No. 5, Fig. 1) is sometimes resorted to for a very heavy finish. This is rather hard on the roller itself since heavy weight is used at the same time, but an excellent finish is the result. The superiority of the finish is due to the weight of the extra roller and to the fact that the cloth is in contact with the hot cylinder during the whole process. In addition, the cloth is acted upon both top and bottom, and in this way a mangle finish is approached.

Mangling: Stone mangles are only used now for the lighter classes of linen goods. For jute goods, heavy hydraulic pressure mangles are now invariably used. On account of the very heavy pressure exerted in mangling, it is necessary that all goods in-

tended for this process should first be flattened either by heavy calendering or by chesting. The former is probably the more common procedure. This treatment prevents all possibility of folds or creases being in the cloth when it is filled or rolled on the mangling "pin." The presence of creases or of any extra thickness in any part of the cloth is sure to cause considerable damage to the piece in the mangling process, and great care is exercised to prevent anything of this

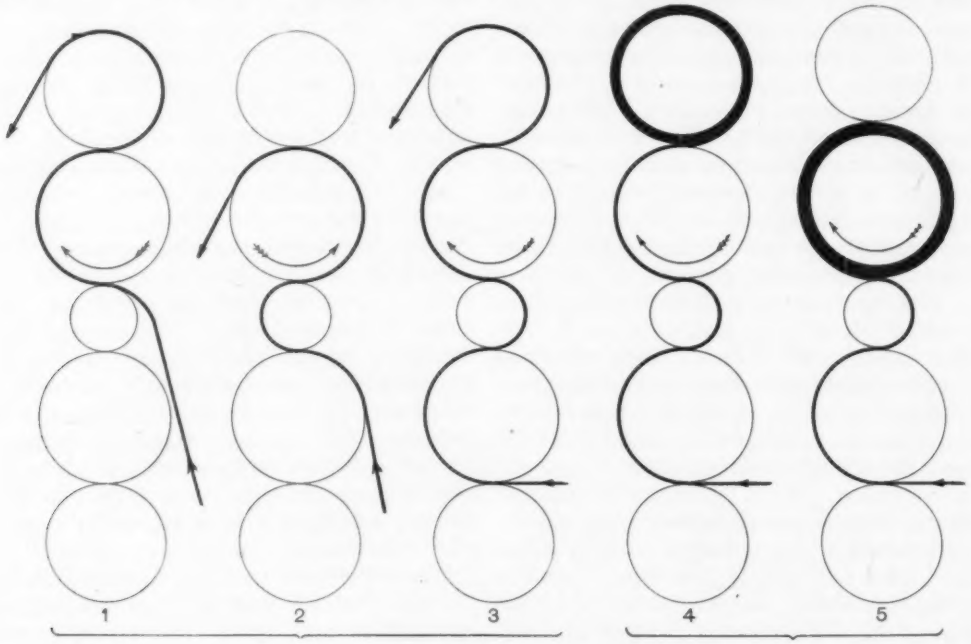


FIG. 1.

character. The essential difference between calendering or chesting and mangling lies in the fact that in the two former the motion of the machine is continuous in one direction during the progress of the piece through the machine, while in the latter the piece is first rolled tightly round a solid metal "pin," which is then entered between two ponderous metal rollers, between which it is rotated backwards and forwards under heavy pressure. These rollers are brought into contact with the pins and are then gradually subjected to a tremendous pressure by hydraulic means. The change of rotation of the rollers may be either by hand or by automatic means, the pin and cloth meanwhile rotating between them. This to and fro motion is continued for about 10 to 12 minutes, according to the finish desired. Most machines are provided with three pins set 120 degrees apart, so that while one is between the pressing rollers the other two are at the back and the front of the machine respectively. During the time that the piece between the rollers is being mangled the attendants wind on another piece on the front pin, and remove the previously mangled one from the back pin. Mangling imparts a soft, full, mellow feel to the cloth—a quality which cannot be attained by other existing means.

Goods are usually made up in one or other of three ways: 1. Rolled full width. 2. Folded and rolled. 3. Lapped full width. The method adopted depends entirely upon the requirements of the customer. Those fabrics intended for linoleum backing are always rolled full width, but other goods for rolling are generally first crisped when the width is about 56 inches or over.

Large quantities of jute goods, chiefly hessians, are, however, used for padding purposes, and to fulfil this function satisfactorily

they require to be starched more or less heavily before finishing in order to make them stiff, hard, and firm. A considerable portion of the goods so treated are also dyed black to keep them more in harmony with the cloth they are destined to stiffen. Such goods are thoroughly starched, the ingredients used being chiefly wheat, flour, farina and similar substances for adhesive purposes and China clay as the loading agent, while strong antiseptics like chloride of zinc are introduced to prevent mildew. The pieces are then properly dried by being run over a series of steam heated cylinders. In some cases no further finishing may be necessary, but large quantities of these stiffened hessians are finished sometimes with one side only glazed, but at other times with both sides so treated. Glazing is accomplished in an ordinary chesting calender, but for a glazing finish the steam heated cylinder is geared with the bottom iron roller so that the surface speed of the latter, and therefore the speed of the cloth entering the calender, may be reduced below the surface speed of the steam-heated cylinder. The surface velocity of the latter may be anything from 30 to 50 per cent. greater than the speed of the cloth. The fact that a glaze or high polish is obtained depends entirely upon this difference in speed, the presence of starch, and the heat supplied by the cylinder. The latter, which is under heavy pressure, slips over the fabric and imparts the high polished effect. If both sides of the fabric require polishing, the cloth must be run through a second time, each side being thus presented to the hot cylinder. Stiffened hessians are always made up in the rolled form.

Packing: Goods may be forwarded either loose, that is, in pieces, or in press packed bales. The former mode of forwarding is suitable for short distances only, but yarns, pieces, or sacks that are to be shipped abroad are, from the point of view of greater security, the reduced cubic space occupied, and therefore the reduction in freight obtained, always packed under hydraulic pressure. Some sacks and yarns are simply pressed and ıoped, but cloth is generally carefully covered with pack sheet, while in some cases paper and waterproofing are introduced between the goods and the outer covering.

PREPARING WHITE WOOL FOR MIXTURES.

When white wool is mixed with black in the raw state the mixture has a better appearance if the white retains a part of its natural yellow shade. Bleached white makes the mixture look harsh when mixed with black on account of the sharp contrast. Moreover bleaching is expensive. Various methods have been introduced to displace bleaching by removing a portion of the yellow shade of the fibre, among them being the following:

1. For 100 pounds of wool, 1 1/2 pounds of oxalic acid and 1 pound of sulphuric acid 66° Be., are dissolved separately then added to 2,000 pounds of water at 120° F. When starting the bath it is advisable to add double the quantities named. The wool is then entered and at the end of 35 or 40 minutes the yellow shade will be largely removed. The wool is then taken out and rinsed several times.

2. For 100 pounds of wool 1 1/4 pounds of chloride of tin and 1 pound of hydrochloric acid are dissolved in water and then added to the bath, which is heated to 165° F. and 1/4 to 4/10 of a pound of sulphate of indigo paste added. The dyer must regulate the amount of indigo to suit the requirements of each case. The wool is worked in this bath for one hour.

3. For 100 pounds of wool 1/4 to 4/10 of a pound of Prussian blue is dissolved with four times the quantity of oxalic acid, forming a concentrated solution. This is added to the bath with 13 to 14 pounds of sulphate of soda. The wool is worked for three-quarters to one hour at 150° F.

4. For 100 pounds of wool 1/4 to 1/2 an ounce of Formyl Violet S 4 B, 1/2 pound of acetic acid (increased if the water contains lime) and 4 pounds of sulphate of soda are dissolved in the bath in which the wool is worked at 160° F.

5. This is process 4 with 1 to 1 1/2 ounces of cyanole extra added to the bath.

6. The wool is worked in a bath of bisulphite of soda at 2° Be. at a temperature of 100° F., to which is added 1/3 of an ounce of methylene blue. The wool is worked for one hour, then taken out and rinsed.—P. Hoffmann in L'Industrie Textile.

PLAN FOR A SMALL WOOLEN MILL.

BY CHARLES HERITAGE.

The accompanying drawings show plans for a four or five set woolen mill and the best arrangement of the machinery to save cost in

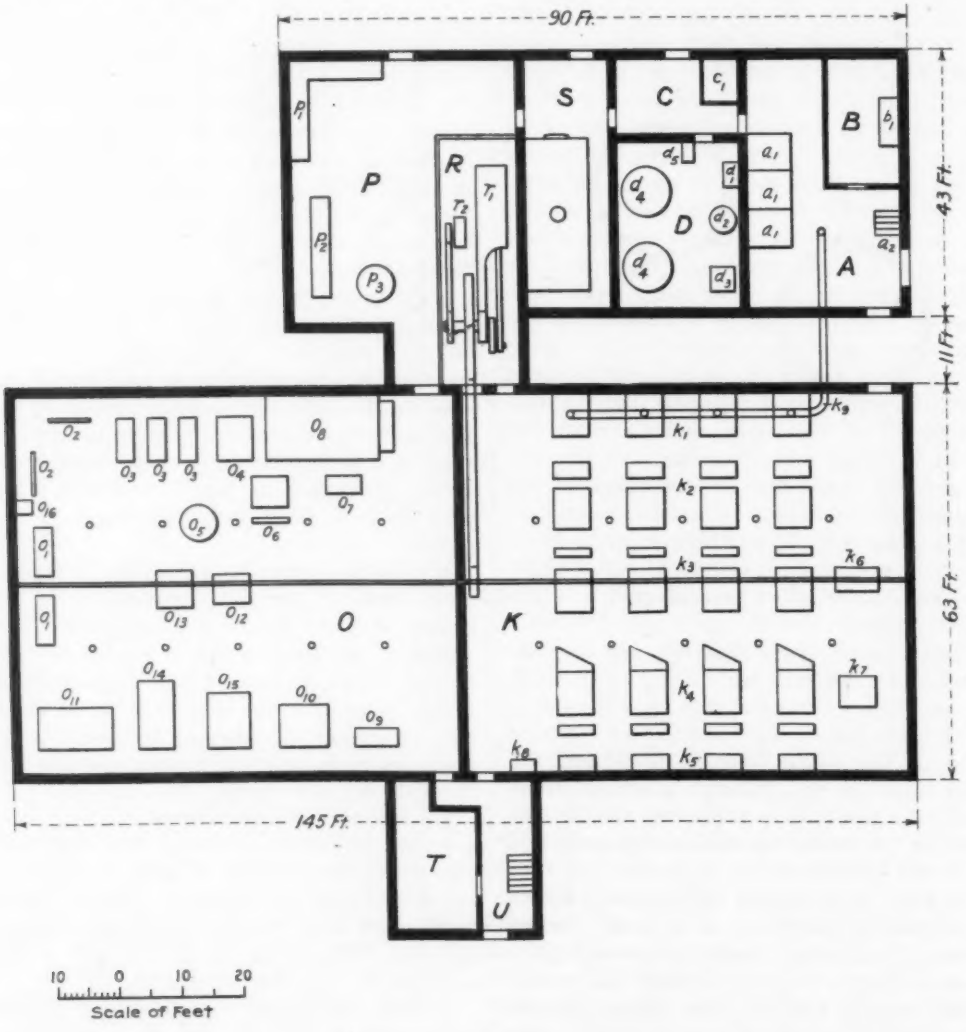


FIG. I.

In Dundee the average earnings of card-room workers is 13s. ($3.12); spinning room, 14s. ($3.36); while weavers average 17s. ($4.-08) per week of fifty-six hours. The total number of jute mills in Dundee and its vicinity is 54.

handling the stock in process from the raw material to the finished goods.

In Fig. 1, the ground plan, A is the wool room, 24 by 40 feet; a^1, the bins for the different grades of wool; a^2, stairs to the picking room; B, the wool sorter's room; b^1, the

sorter's bench; C, the drug room, 12 by 18 feet, c^1, the overseer's office; D, the dye house, 18 by 28 feet; d^1, the wool scouring box; d^2, the wool extractor; d^3, the wool or cloth dye tubs; d^4, the wool dye tubs; d^5, the rope hoist to carry the wool to the dry room above. K is the card room, 60 by 70 feet. The floor posts are 11 feet apart. K^1 is the wool bins for the cards; k^2, the Bramwell feeds and first breaker cards; k^3, the drawing lap stands and second breakers; k^4, are Apperley feeds and finishers with Barker condensers; k^5, roping spool racks; k^6, card waste duster; k^7, card grinder; k^8, elevator to the spinning room; k^9, blow pipe from picker room. O is the finishing room, 60 by 70 feet; o^1, burling boards; o^2, sewing perches; o^3, fulling mills; o^4, cloth washer; o^5, extractor; o^6, cloth napper; o^7, up-and-down gig or brush; o^8, cloth dryer; o^9, back burling boards; o^{10}, shear; o^{11}, fine drawing perch; o^{12}, steam brush; o^{13}, press; o^{14}, inspecting board and perch; o^{15}, folding, measuring and rolling machine; o^{16}, the chute from the weave room. The engine room, R, and machine shop, P, 36 by 42 feet, has a passage way into the main mill, 10 by 20 feet; p^1, the work bench; p^2, the lathe; p^3, the drill; r^1, the engine; r^2, the dynamo. S is the boiler house, 13 by 40 feet; T the main office; U the main entrance to the mill, 22 by 24 feet; v, superintendent's office; W, pattern room; w^1, pattern loom.

FIG. 2

Fig. 2 is the plan of the second story, in

which E is the dry room, 12 by 18 feet; e^1, the wool dryer. F and G, picker room and store room for colored stock, 24 by 40 feet; g^1, the mixing picker; g^2, the blow pipe to the bins; g^3, the bins; g^4, the pipes going to the ceiling and entering the top of the bins; g^5 the stairs from the stock room; g^6, blow pipe to the card room bins. H is the gauze room. L is the mule room, 60 by 70 feet; l^1, the mules; l^2, yarn boxes; l^3, elevator from the card room. M is the weave room, 60 by 70 feet; m^1, the looms; m^2, the cloth perch; m^3, chute to the finishing room. N is the dressing room, 36 by 42 feet, with a passage way, 10 by 20 feet, into the main mill, n^1, the spooling frames; n^2, dressing frames; n^3, drawing-in frames. V is the superintendent's office; W, pattern room; w^1, pattern loom.

Fig. 3 is the front elevation. The water tanks should be in the tower to supply the sprinklers throughout the mill. The bottom of the tank should be 14 inches above the roof. The mill is 145 feet long by 63 feet wide, 40 feet high, and 14 feet between floors. There is a truss roof with a five-foot pitch. The skylight, running the length of the mill, is 6 feet high and 6 feet wide; the skylight windows are 5 feet high and 4 feet wide, with 6 inches between windows.

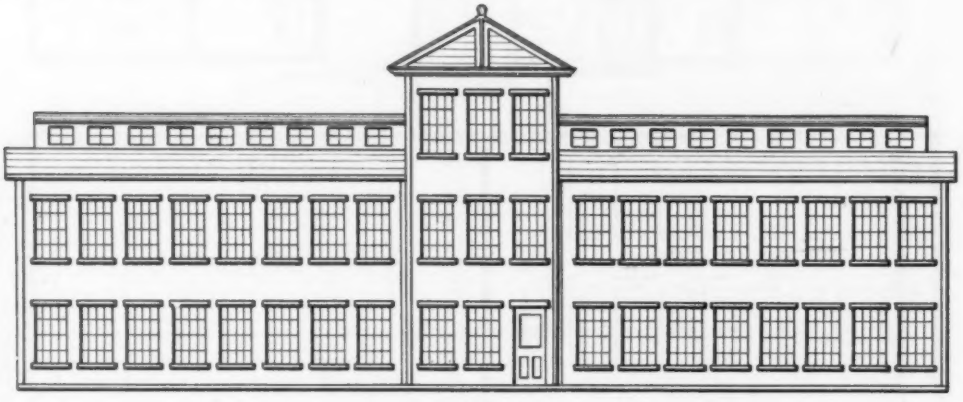


FIG. 3.

During the fiscal year ending June, 1906, the United States imported 103,945 tons of raw jute, valued at $6,449,684, nearly all of it from the East Indies, and jute manufactured fabrics valued at $20,083,938.

PROCESS TO INCREASE THE STRENGTH OF TIN WEIGHTED SILK.

It is a frequent complaint that silk weighted with tin salts loses much of its strength, especially when exposed to the light. A process to prevent this loss of strength has recently been patented by a resident of Milan, Italy, and consists of treating the silk with sulpho-cyanate. Tests of the silk before and after weighting show that with this treatment the strength of the silk remains practically unimpaired. The sulpho-cyanate is applied during either the weighting or the drying process in the form of a dilute solution.

One test consisted in dividing a small batch of organzine weighted to three per cent. in two parts, of which one-half was treated after coloring with sulpho-cyanate of ammonia solution and the other in the ordinary way with sulphuric acid. After exposing the two samples to the light for ten days the test for strength gave the following results:

	Strength.	Elasticity.
Without sulpho-cyanate,	43.32 gr.	57 mm.
With sulpho-cyanate,	63.88 gr.	135 mm.

Other tests gave the following results:

	Strength.	Elasticity.
In the ordinary manner,	40 gr.	47 mm.
With sulpho-cyanate of ammonia,	45 gr.	83.9 mm.
With ferrocyanide of potash,	30.2 gr.	27.3 mm.

DIE SEIDE.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Weighting Silk.

Editor Textile World Record:

I have read with interest the article on weighting silk in the May number of the Textile World Record. I have been using quebracho for the last year or more for the weighting of black silk on machine twist, sewing and button hole twist. I prefer it to gambier as it is cheaper and there is no waste, whereas there is more or less dirt and waste when using gambier. I find no trouble in taking sixteen ounces of gum silk and after degumming, weighting it to eighteen or twenty ounces, acid test, and to twenty-four ounces, not acid test, without the use of tin.

I never use any tin for machine twist and sewing silk for there is no difficulty in getting plenty of weight without it. I am also satisfied that a stronger thread is obtained without tin and there is less trouble in spooling, whereas tin weighted silk sometimes gives a great deal of trouble and after a time is apt to deteriorate. I think all dyers should try to discourage the excessive use of tin salts in silk dyeing. Harrison.

A Jacquard Design.

Editor Textile World Record:

As Mr. Hargreaves says, in your May issue, referring to Question 802, the sample can be reproduced in the usual way, that is, each thread on each separate hook in the machine, and the effect made up in designing. According to him, taking 278 warp threads per inch on a separate hook, 7¼ inches design repeat in the cloth would require either one 2,000, or two 1,000 combined jacquard machines. This size of jacquard is rarely used. Suppose I do not have them, I want to know whether the effect can be produced on half the above size.

As I have already said, I think the coarse plain ground, 2 x 2 in the sample, instead of the usual 1 x 1 pick ground, so very essential in such fabrics, is necessarily adopted here to contrive larger designs than the actual capacity of the machine would permit and that the effect in the ground and figure was produced by special harness arrangement. The main part of my inquiry is whether by any special harness arrangement and contrivances, designs such as that illustrated in your recent number can be produced on half the number of hooks that would be required in the usual way. Orient (856).

There is a method by which one can produce larger designs than the capacity of the jacquard machine will apparently permit. As an illustration I will give a method of making a design with twice as many threads as there are hooks in the jacquard machine, at the same time actuating the warp threads separately in portions of the design.

Suppose in tying up the jacquard harness, two leashes are connected to each hook (two eyes to each hook), it will be evident that when a hook in the machine is lifted two warp threads will be lifted also. By lifting each alternate hook in the machine a shed is formed of two threads up and two threads down. In this shed place two picks of filling, then reverse the operation for two more picks of filling and the effect will be a plain weave 2 and 2 in the warp and filling. This is the ground effect of the silk design in question.

In order to work separately the two threads attached to one hook in making the jacquard figure, rods are used which pass through the leashes in a convenient position underneath the comber-board. For lifting purposes these rods are attached to the hooks in the jacquard machine; four or twenty-four rods, or any number that can be conveniently used are inserted in the leashes of the harness. For present purposes I will assume that eight rods are passed through the leashes underneath the comber-board. These eight rods are attached to the harness so they will operate the threads in consecutive order as an eight harness twill or, as in this fabric, they can be worked as an eight-harness satin. Each rod will operate every eighth thread. Practically this arrangement represents an eight-harness, which can be operated as such independent of the jacquard design.

If an eight-harness satin effect is required then by dropping four hooks, or any number desired, from the machine and lifting by means of the jacquard machine the hooks connected to the rods in satin order, there will be produced a satin effect of single threads, while the threads in the ground are

weaving the plain effect as described above. The floating effects made by the filling are obtained in the usual way by means of the cards actuating the jacquard machine. By the method outlined a jacquard design can be produced containing twice the number of warp threads that there are hooks in the jacquard machine. Joseph Hargreaves.

Invisible Loss.

Editor Textile World Record:

What is the invisible loss made in converting raw cotton into cotton cloth? By invisible loss we mean the shrinkage in the weight of the goods unaccounted for by cotton waste or finished cloth.

Sandy Adams (881).

The invisible loss or waste which is accounted for between the raw cotton and the finished cloth varies more or less in different mills and localities and with different kinds of cloth. I have known it to run as high as 6 per cent.; in other cases only 1 or 2 per cent. I should say that it would be idle to attempt to lay down a hard and fast rule on this point. In some mills a great deal of the waste or cloth used for cleaning purposes is burned and this amount makes quite a little difference in the course of the year as compared with another mill which saves everything and sends it to the waste house.

Savannah.

The percentage of invisible waste in the manufacture of cotton into cloth will depend upon many conditions that vary widely in different mills. This applies also to the visible waste, which depends mainly upon the number of the yarn manufactured while the invisible waste depends on the length of the staple, the amount of rainfall during its growth and the newness of the crop. As the subject on hand concerns only invisible waste we will take for purposes of illustration the annual production of a mill whose average number of yarn is 40s.

Annual delivery to pickers, 9,020,524 pounds, net; cloth produced and visible waste, 8,531,201 pounds, net; invisible waste, 489,323 pounds; 489,323÷9,020,524=5.42 per cent. invisible loss.

Dust chimneys carry off a part of this waste, the amount depending considerably upon the fan draft as well as the length of the staple. Long staple cotton is less likely to have an excessive amount of dust and short fibres than ordinary uplands cotton. A large proportion of the loss, however, is due to moisture in the cotton. Careful tests, two of which follow, have proven this point.

To obtain a natural drying out ten bales were thoroughly separated and scattered over the floor of an unused room, and allowed to remain there two weeks at an ordinary temperature. At the end of that time the cotton was collected and weighed with the following results: Original weight, 9,371 pounds; dried weight, 9,153 pounds; loss in moisture, 281 pounds, or nearly 2.33 per cent.

The same cotton was then scattered over the floor as before, the doors and windows were closed, the steam turned on and the cotton allowed to dry another week. Upon again weighing it was found to have lost an additional 79 pounds, a total shrinkage of 3.17 per cent. This latter condition, however, would not be a practical one in the ordinary process of manufacturing as the cotton is seldom subjected to an excessive drying operation, and if it were excessively dried, it would doubtless absorb a considerable amount of moisture from the atmosphere.

The United States Department of Agriculture, in an exhaustive treatise on cotton, states that the new cotton, that is, the first picking, contains not over 4 per cent. of moisture and that the percentage decreases as the season progresses.

Ben Shaw.

I would say that for good middling cotton the invisible waste is excessive, while the proportion of droppings, fly, etc., is low. As a matter of fact the per cent. of these two items does not vary greatly so far as the writer has found on these grades of cotton.

Owing to the fact that the invisible loss is so great, it would indicate either a large amount of sand, broken leaf, or other fine impurities, or it may be due to a large per cent. of moisture.

The following tests may be referred to for comparison. Test No. 1 was made with 1 3/16 inch good middling cotton passed through a combination feeder and breaker picker, and a finisher picker; the grid bars used were not pin bars, but were set from 3/4 to 7/8 of an inch from beater blade. This comes quite near to the conditions given in the question, but the waste per cent. was as follows: Droppings, fly, etc., 2.18 per cent., and invisible loss, 1.7 per cent.

Test No. 2 made under same conditions as No. 1 gave 2.06 per cent. droppings and fly, and 1.77 per cent. invisible loss.

Test No. 3 made with 1-inch middling cotton and three picker processes, viz: Feeder and breaker, intermediate and finisher pickers, gave 4.2 per cent. droppings, etc., and 3.3 per cent. invisible loss.

Test No. 4. This will give an idea of the waste account through the picking, carding, and combing processes, and was made with a bale of Egyptian cotton having a gross weight of 750 pounds, and using only two pickers.

	Lbs. Weight.	% Loss.
Bagging	16	2.133
Ties	4	.533
Total loss up to mixing	20	2.666
Total lbs. of cotton mixed	730	
Picker, droppings	11¾	1.609
Picker, fly and sweeps	2¼	.308
Picker, invisible loss	8	1.09
Total weight of laps made	708	
Card strips	30	4.23
Card fly, etc.	12	1.69
Card unaccounted for and sweeps,	10	1.41
Total weight of card sliver	656	
Comber waste	112	17.07
Comber fly and sweeps	3	.457
Comber waste unaccounted for	4	.609
Total weight of combed sliver	537	
Total weight in process	213	28.4

The total waste per cent. from middling American cotton in a yarn mill may vary from 14 to 18 per cent. on carded yarns, and from 30 to 40 per cent. on combed yarns; an approximate idea of the loss at each process being shown in the following table:

Breaker picker and feeder or opener,	3½	to	4½%
Intermediate picker	1½	to	2½
Finisher picker	1¾	to	2
Card	4	to	7
Sliver lapper	¾	to	1
Ribbon lapper	½	to	¾
Comber	12	to	22
First drawing	½	to	¾
Second drawing	½	to	¾
Third drawing	½	to	¾
Slubber			¾
First intermediate			½
Second intermediate			½
Fine roving or jack frame			½
Ring frame	1½	to	2½
Mule	1½	to	2½

There is one other point needs mention, and that is relative to the pin grid bars which were referred to in the question. In tests made with this style of bar, the waste is increased from 1/2 to 1 per cent. over the amount extracted with the common bars, other conditions being equal. Bolster.

I would consider 6 per cent. invisible loss excessive for a good middling grade of cotton, though in making tests I have experienced similar results on this class of cotton, but have invariably been able to ascertain the reason for the excessive loss.

The usual cause of excessive loss (invisible) is damp cotton, fed direct from the bales into the machines, without first having been opened out and exposed to the dry air for a time, or made into a mixing and allowed to stand a few days before using; in fact, when cotton is used direct from the bale, the picker house tests are always more irregular and consequently less reliable, than when the cotton is first mixed.

When cotton has been allowed to stand in the mixing for a reasonable length of time, the invisible loss in the picker house on good middling grade of cotton should not amount to more than 3 to 4 per cent.

Occasionally the casings at the sides of the machines are not air tight, and consequently allow a percentage of cotton to be drawn into the dust flue and up the chimney.

I have also found at times a quantity of very fine white sand in some growths of good middling cotton, which, though imperceptible to the naked eye while in the cotton, shows very distinctly if a portion of the cotton is shaken over a black board or sheet of black paper; and being so fine causes invisible loss, as it gets carried away into the dust chamber by the draught.

It appears that Sandy Adams is making really too little actual (accountable) loss by about 1 to 2 per cent.; and too much invisible (unaccountable) loss by about 2 to 3 per cent.

Taking this view of the matter, it occurs to me there may possibly be too much draught on the machines. The fans and beaters may be running too quickly, and sending good cotton up the flue, which should be retained in the machines.

The fact of having such a moderate amount of loss under beaters and screens, implies that the grid bars are set satisfactorily, so I would advise looking carefully into the aforementioned reasons for the excessive invisible loss. It would be well also to examine the dust on the floor and walls of the dust chamber, to ascertain if there is an excessive amount of fibre accumulation adhering thereto and covered over with the fine dust, as the importance of the matter demands the most careful attention. Morgenland.

In my experience of 25 years I have found that the percentage of unaccountable waste depends on the condition of the picker room. If the room is very dry from 4 to 6 per cent. of moisture will evaporate from the raw stock; the amount of moisture present in cotton varies with the weather conditions at the time the cotton is picked. I have just returned from the South where I spent over a year in the cotton district. At the time of the first picking last fall we had four or five weeks of the most stormy weather I have ever seen. For weeks I was obliged to use cotton right from the field and in some cases we had to spread it out in a room and keep steam on all night in order to use the cotton next day. Many farmers baled their cotton in this condition, drying it only what they could in passing it through the gins.

Berlin.

Spooler Production.

Editor Textile World Record:

What is the usual production in spooling black skein yarn on a skein winder, counts ranging from 2/5s to 4/20s, and what is the price generally paid for such work? Webber (855).

This is a rather hard question to answer as so many things must be taken into consideration. The amount of yarn one girl can spool depends on the speed of the spindles, the condition of the yarn as it comes from the dyer, the count of the yarn, the size of the skein, and the color. Black is a particularly hard color to handle, and the coarser the yarn the fewer the number of spindles she can run. Sometimes one girl can keep ten or twelve spindles running at once; other times only one or two, but if everything is in good working order she should be able to turn off a production of 780 to 900 pounds a week. Our skein winder does very well if she turns off 700 pounds of 2/16s a week. In this instance the cost is 1 2/10 cents a pound, or $8.40 a week.

Following is a rule I have worked out and if everything is running well it gives nearly the exact production for one girl:

1.25 inches (diameter of bare spool) × 3.1416 = 3,927 inches, circumference of bare spool.

5 inches (diameter of full spool) × 3.1416 = 15.708 inches, circumference of full spool.

Total number of inches, 19.635.

19.635 ÷ 2 = 9.817 inches, average, wound at one turn of the spindle.

Suppose the spindle is running 800 r. p. m., there will be (800 × 9.817 inches) 7,853.6 inches wound per minute.

Now we will take 2/20s yarn, which is the same as No. 10, and we will assume that the skein weighs one-half pound. This will measure (840 × 10 ÷ 2) 4,200 yards, or 151,200 inches.

151,200 (inches) ÷ 7,853.6 (inches per minute) = 19.25 minutes that the skein will run.

The girl will need about 1 1/2 minutes to put the skein in order; 19.25 ÷ 1 1/2 = 12.8, or 13 spindles to one girl.

The number of minutes in a week is (58 hours × 60) 3,480; 3,480 ÷ 19.25 = 180 half-pounds, or 90 pounds to a spindle; 90 pounds × 13 spindles = 1,170 pounds per week, with 10 per cent. allowance.

At this rate the production for the counts mentioned would be as follows:

Yarn Count.	Spindles per Girl.	Production Lbs. Yarn.	Less 10% Lbs.
2/5	3.3	1,148	1,033.2
2/8	5.1	1,152	1,037.3
2/14	9	1,152	1,036.8
2/20	13	1,170	1,053
2/30	19	1,178	1,060
3/12	5.1	1,152	1,037.3
3/26	10	1,160	1,044
4/16	5.1	1,152	1,037.3
4/20	6.4	1,158	1,042.5

The price varies from 8 mills to 1 2/10 cents per pound. Clayton.

Laying Warps in the Reed.

Editor Textile World Record:

How shall I figure on a warp so as to lay it in the comb for narrow beaming? The pattern is as follows: 10-tooth comb; warp to be laid 36 inches inside selvage, allowing 1 inch for selvage, making 37 inches in all; 24 ends (14 white, 4 black, 2 white, 4 black); warp, 366 pins white, 180 pins black. Begin with 20 white and end with 18 white.

Sandford (865).

Evidently "Sandford" has left out the most vital part of his question; namely, the number of ends in the warp, so that number will have to be assumed. Assuming that it is a worsted warp and that a 15 reed 4 ends in a dent would be used, we would figure it as follows:

15/4 reed, 36 inches inside selvage; add 1 inch for selvage = 37 inches.

Pattern: white,	14	2		= 16
Black,		4	4	= 8
				24

Slightly changing the figures to conform to the arrangement, yet retaining the same pattern, we have:

White,	6	2	8	= 16
Black,	4	4		= 8
				24

15 (reed) × 4 × 36 (inches) = 2,160, total in warp.

2,160 ÷ 24 = 90 patterns.

As there are 540 pins to be used, 2,160 ÷ 540 = 4 ends in each pin.

The comb has 10 teeth or 10 spaces to the inch. 36 × 10 = 360 teeth. 2,160 ÷ 360 = 6 ends in each tooth.

The 20 and 18 ends white are for the selvage.

All warps will not have an equal number of ends in a pin or tooth of the comb, but the same method can be followed no matter what the division might be by simply dividing the remainder in as equal a manner as possible to prevent ridges in the warp. While the threads in the comb must be as near the same number as possible the ends in each pin are often placed according to the division in the weave.

Jean Paul.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The principal topic of conversation in the knit underwear market during the past month has been the opening of the carded yarn lines of men's balbriggan shirts and drawers which occurred on June 10th. We believe the lowest priced garment was shown by the Gilbert Knitting Co. It weighed 3 1/2 pounds and was offered at $2.00 net, but so far as we can learn, was not purchased very freely, buyers stating it was altogether too light weight to be of any real service.

The Warsaw Knitting Co. showed a very creditable garment at $2.05 for shirts and $2.00 for single seated, or $2.10 for double seated drawers. A fair amount of business was placed on this basis and then the price was advanced five cents per dozen after the second day.

The Perry Knitting Co. sold a four-pound garment at $2.12 1/2 with double seated drawers, which were made with inside band, two buttons, and without suspender tapes.

The John K. Stewart Co. sold up their entire production in three or four days at $2.10 for shirts and double seated drawers or $2.00 for single seated drawer.

Robert MacKinnon & Co. showed a four-pound line at $2.10 with single seated drawers and $2.20 with double seated drawers. Also a five-pound line at $2.30 and $2.40.

The Oneita and Capron Mills both showed their five-pound lines at $2.30 with double seated drawers.

A number of the manufacturers of low end balbriggans are also showing lines from $2.50 to $3.00, and while a number of orders were taken at these prices, they were small as a rule, the buyers hesitating to pay the additional costs for the small difference between these and the $2.30 lines, which in some instances consisted only of a silk band on the shirts and an extra button on the drawers.

The Bailey Knitting Co., who sold a large quantity of mesh garments last year at $1.90, are offering the same line for 1908 at $2.20 and we understand have booked some large orders at the advance price. They also show the "Plexiform" line, similar to "Porosknit," at $3.37 1/2.

E. M. Townsend & Co. sold up the Lawrence of combed balbriggans in a very few days and wired all their men to come home before some of them had fairly started on their trips, and when they had time to catch their breath and figure up, it was found necessary to cut some of their orders down 40 per cent.

One of the new things in underwear shown this season is a line of men's balbriggan suits made by the Roff Underwear Co. to retail at $1.00. Heretofore the ribbed fabric has had the call as being the proper cloth for combination suits, but there has been some demand for a flat garment and these manufacturers state that the garment is meeting with a ready sale.

There is no abatement in the demand for nainsook underwear and some large orders are placed for 1908. Erlanger Bros. have made preparations for increasing their production and will put an unbranded line on the market for another season to meet the demand for a lower priced line than the B. V. D., which they have advertised so extensively.

Wright's Health Underwear Co. are showing a line of nainsook goods at $3.40 on which they claim to have taken considerable business. They also show a line of crepe shirts and drawers at $3.75 which is meeting with ready sale.

Boys' balbriggans have been very scarce this season and as there are no new lines shown for 1908, a repetition of the scarcity will be looked for. The Perry Knitting Co. have a line at $1.75 and one at $1.90 and the Oneita Knitting Co. have one at $1.92 1/2,

while the Day & Kenyon Co. show a very good one at $2.00. West Bros. of Syracuse are showing a line of boys' ribbed shirts and drawers for 1908 at $2.00. We understand the same line was sold last season at $1.87 1/2.

The Oak Knitting Co. are apparently making a specialty of men's and boys' athletic underwear. They show a large line of striped shirts made sleeveless and buttonless in two and two rib at $1.90 with drawers to match at $2.00. Also in mercerized fabric at $3.50 and $4.75. They are also showing men's white and ecru combination suits made of carded yarn at $3.75.

HOSIERY.

It is the opinion of the most interested parties that at this writing fully 75 per cent. of the season's production has been sold. Nearly all the small manufacturers are entirely sold up and a good proportion of the larger manufacturers are in a similar condition. The above percentage is based on the possible production and no account is being taken of the restricted production which is liable to occur on account of shortage of labor, difficulty in getting supplies and other reasons. It is freely stated that the majority of the buyers have not covered more than two-thirds of their needs and with the large number of small jobbers who have not yet made their initial purchases, it would indicate that there will be a shortage of merchandise another season. In the face of these conditions, we learn of a number of buyers who have covered only a small proportion of their needs and openly say they are waiting for lower prices before completing their purchases.

The fine gauze lines are about as well sold up as full fashioned goods were at our last writing, and during the last week a still further advance of 2 1/2 to 5 cents per dozen has been made on a number of medium and lower grade lines. One and a half pound, 176-needle, cut toe goods that sold last season at 67 1/2 cents are now quoted at 77 1/2 to 80 cents; 1-lb. 2-oz., 176-needle, seamless half hose are now quoted at 75 cents; 84-needle bundle goods that were sold last season as low as 50 cents are now held at 62 1/2 cents.

Split foot seamless goods are getting scarcer than ever. The licensed lines made with the consent of the Shaw Stocking Co. are practically sold up and the other lines are not shown very freely at the present time.

The white feet ladies' goods are also very hard to find and 15 per cent. does not cover any more than the advance asked on this style in the market.

Anything new of a fancy character is scarce, as manufacturers can get all the business they want on the plain goods without resorting to printing, extracting and embroidering their lines. A keen demand is being felt for extracted half hose at 75 to 85 cents and anything within this range of prices is eagerly picked up.

It is yet too early to say with any degree of certainty what the popular fancy goods for another season will be, but the indications are that tans will be good and also that a combination of black and white will be in good demand. Laces of all grades will probably be slow and it is noticed that there is a tendency away from the very gauzy fabrics in favor of those with a little more body, the consumer demanding goods with more durability.

One of our domestic manufacturers of high grade silk goods has just put on the market a spun silk stocking made with cotton garter top and with cotton heel, sole and toe. These get to the retail counters at $1.50.

FANCY KNIT GOODS.

The business in this department during the last month has been fairly active, due to the fact that people are preparing for their summer outings, automobiling, etc.

Men's sweater coats brought out last season have grown in popularity and threaten to supersede entirely the old style sweater. These are shown in a wide range of colors, but the Oxford is by far the most salable. They are made without collars and with large pearl buttons.

There is also a good demand for the

Jersey coat in lighter weight and made up the same as the sweater coat.

Another new article in the knit goods department is a line of motor scarfs brought out from Germany. These are, as the name implies, used principally by motorists and are worn by both men and women. They are regular scarf shape, loosely knit from worsted, mercerized and silk yarns, in a large variety of fancy patterns and plain colors.

THE MANUFACTURE OF BRAID IN THE UNITED STATES.

BY FERDINAND THUN,

(Continued from June.)

SOUTACHES, PRESIDENT BRAIDS, SQUARE BRAIDS, CORDS AND TUBULARS.

These braids are used principally by the embroidering trade. They are narrow trimmings which can be readily laid into any desired curves and shapes, can be formed into ornaments, loops, etc., and for this reason are principally used where a military effect is desired. This class of braids, especially soutaches and presidents, are generally made with warps. The soutache machine is the simplest braiding machine that can be made, consisting of two plates only, the carriers running in the shape of a figure 8. The president braider is generally made with eight carriers, and consists of three plates, generally having a 6-horn gear in the centre and two 5-horn gears on the sides.

Fig. 33 shows a 2-head, fancy president braider. This machine can be used for making plain president braid by employing only the carriers 1 to 8, leaving off carriers 9, 10, 11 and 12, which form the cross run, or running them empty without threads. Ordinarily, however, these machines are employed to make fancy effects, and generally, threads of contrasting colors or materials are put in the centre cross run.

The starting motion shown on this drawing will be illustrated more fully later on, as it forms one of the most recent improvements introduced by the Textile Machine Works.

Fig. 34 shows a braid trimming made on a president braider. Either the ordinary

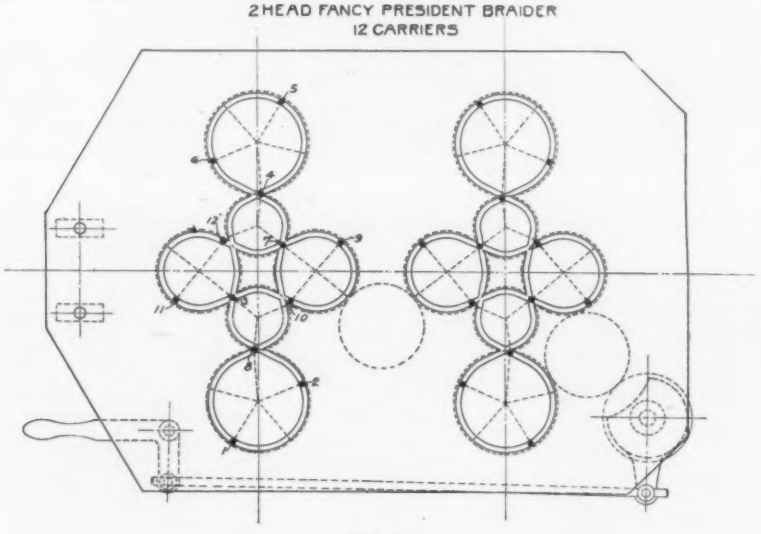
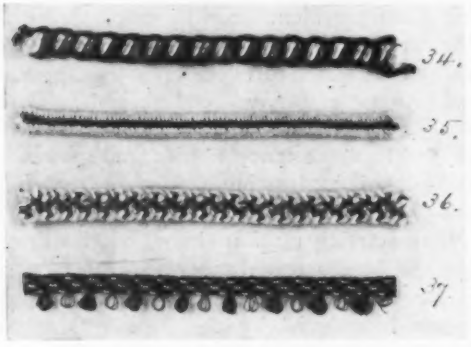


FIG. 33.

8-carrier machine or the fancy president braider shown at Fig. 33 can be used for it. The centre of the braid consists of a heavy biese; this is a soft cord or strand of cotton wrapped loosely with silk or some other covering material. The colored strands in this braid consist of two ends of gimp and two ends of tinsel. The gimp forms the ladder

pattern. The other four carriers of the machine are left empty.

Fig. 35 shows a very popular trimming made on a fancy president braider with twelve carriers. In making this braid eight spools of silk are used which form the main



FIGS. 34, 35, 36, 37.

body of the braid, whereas the four additional carriers traversing the main portion of the braid at right angles carry the tinsel threads. Similar braids are often made with a gimp figure in the centre, in which case one of the four carriers traversing the main body of the braid carries a gimp while the others either run empty or carry silk threads of the same color.

Some fancy braids are produced on tubular machines. As a tubular braid is extremely pliable it lends itself readily to embroidery effects.

Fig. 36 shows a tubular braid made from silk biese and tinsel on a 24-carrier round braider. This pattern is made by using only a portion of the carriers and letting the others run empty, every third carrier being run without thread in this instance.

The braid at Fig. 37 is made on a 24-carrier tubular braider with loop attachments. Patterns of this kind are very popular with the embroidery and cloak manufacturers.

Fig. 38 illustrates a machine for making tubular braids with loops without the use of a loop attachment. It will be noticed that in the braid at Fig. 37 the threads forming the loops must also run through the entire body of the tubular braid. Braids made on the machine shown at Fig. 38, however, can be made with loops of a contrasting color or different material from the color or material used in the main portion of the tubular braid. The loops made on this machine can be made with either one, two, three or four carriers, according to the distance desired between these loops.

CORD-EDGE BRAIDERS.

Fig. 39 shows a 19 by 25 carrier, cord-edge braider. This is a very useful machine, and a great variety of patterns for the dress trimming and millinery trade can be produced on it. In comparing this machine with the one shown at Fig. 38, it will be noticed that the auxiliary run traversing the cord portion of the machine is similar in both cases. At Fig. 39 this auxiliary run is continued to form a

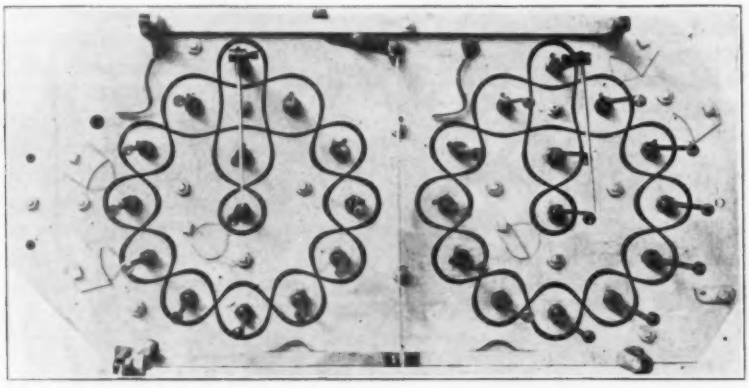


FIG. 38.

flat braid, in this case a 5- or 6-line braid, respectively. The 5-line braid is made with twenty-one carriers by using the cut-off change piece now shown in the machine. If it is desired to use twenty-five carriers, the cut-off piece is replaced by two change pieces set into the plate, and the run of the flat braider is continued to the regular terminal shown on the right of the engraving. The product of this machine consists of a flat braid with a tubular braid attached to it.

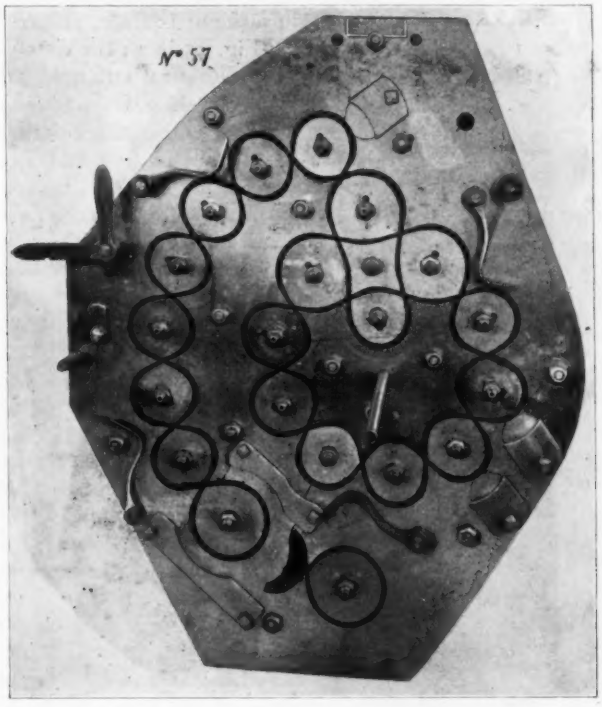
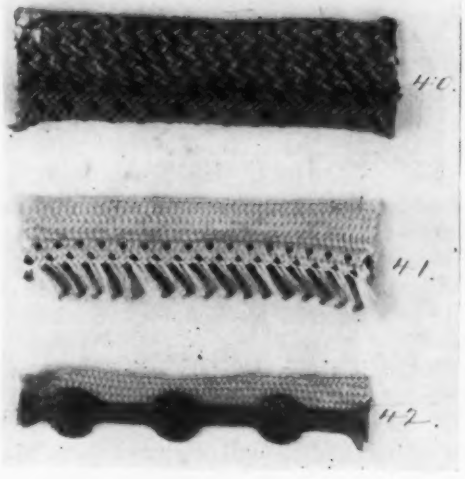


FIG. 39

Fig. 40 shows a regular cord-edge braid with a solid braided cord, such as is used on overcoats, jackets, etc., by seaming the flat braid between two thicknesses of the cloth and letting the cord form the edge.

Fig. 41 shows a cord-edge braid with a brush edge. This braid is produced by applying a cutting attachment on the machine in such a way that one-half of the carriers passing over the cord portion are laid over a fixed blade of the scissors and formed into a loop which is cut open by the movable blade. Braids of this kind have formerly been extensively used as brush-braid skirt protectors.

Fig. 42 shows a cord-edge braid in two



FIGS. 40, 41, 42.

colors, made from artificial silk, with a peculiar pattern at the edge, made on the cord portion of the machine. This design is produced by braiding over the material previ-

FIG. 43.

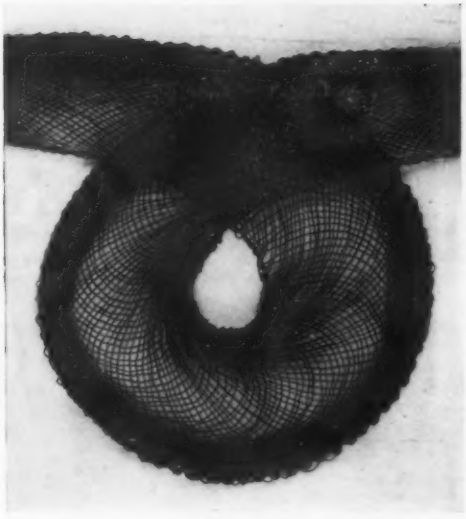


FIG 44.

ously cut in this shape in the form of a flat strip, which is introduced as a filling or warp through the centre portion of the machine.

Fig. 43 shows a cord-edge braid made on a 19 by 25 carrier machine for the millinery trade.

Fig. 44 is also a millinery braid made on a 19 by 25 carrier, cord-edge braider. In this case the cord portion of the braid is made with missing carriers to produce a fancy edge which is often so desirable in the making up of ladies' hats.

AN IMPROVED DRIVE AND STOP MECHANISM FOR BRAIDING MACHINES.

Reference to this new device has been made in connection with a two head, fancy president braider, shown at Fig. 33.

Fig. 45 is a plan view of the new machine. Fig. 46 is an enlarged sectional elevation of the clutch gears and engaging mechanism, showing also the operating connecting rod to the bell-crank and stop mechanism indicated in Fig. 45.

Until quite recently, a wrought iron lever was employed in this type of braiders, which were driven by a common driving bench, and the starting of the machine was accomplished by exerting an upward pressure on that end of the lever extending beyond the front of the machine, and thereby pressing the clutch gear into engagement with the driving gear of the driving bench, the lever being fulcrumed approximately midway of its length. The bell-crank motion of the lever, 35 and 36, and the rotating movement of the arm, 31, permit starting the machine with much greater ease than could be done by the old method, and, in fact, this arrangement makes it possible for the operator to have the free use of both hands if required, as the machine can be started by pushing against the lever, 36, with the knee. Referring to Fig. 46, it will be seen that the intermediate clutch gear, 8, is mounted upon a bolt, 20, extending between the top and bottom plates, 3 and 4; this bolt has its lower end seated in a step bearing, 21, fixed to the bottom plate, while the headed upper end, 22, is secured to the top plate by a screw, 23, so as to permit of it being readily withdrawn for the purpose of removing or changing the parts mounted upon it. The hub of the intermediate gear, 8, extends upward to the top plate, and upon this hub is mounted the clutch gear, 7, which is provided with bottom projections, 24, adapted to enter corresponding recesses in the gear, 8, when gear, 7, is depressed, so as to rotatably engage the two; a spring, 25, however, in the recessed gear, 8, serving to raise the latter clear of such engagement, and thus permit free rotation of the gear, 8. Upon the extended hub, 26, of the latter is mounted a rotatable cam, 27, having upon its upper sur-

face inclined projections, 28, which ride upon corresponding bottom projections, 29, on a fixed cam ring, 30, beneath the top plate, 3, of the machine, so that a turning movement of the rotary cam in one direction will serve to positively depress it, together with the vertically moveable gear, 7, to engage the

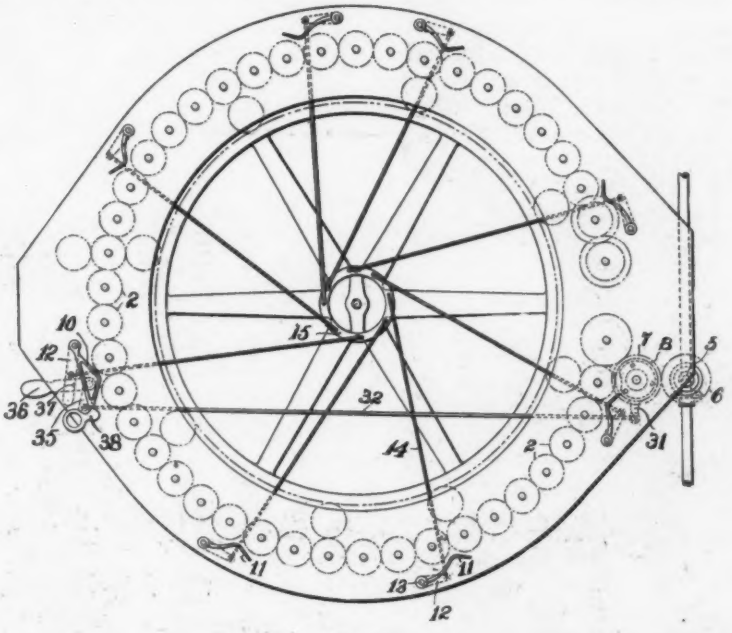


FIG. 45.

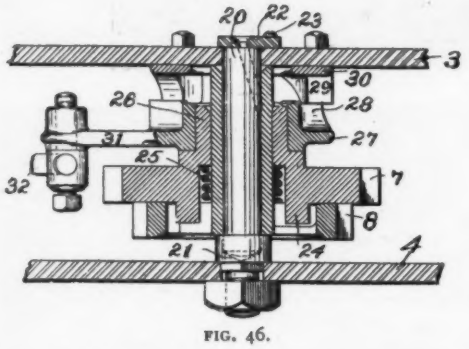


FIG. 46.

latter with the gear, 8. The rotary cam, 27, is provided with a fixed arm, 31, to which the connecting rod, 32, is suitably jointed for operating the same.

To start the machine the operator merely turns the bell-crank arm, 36, until it is locked to the main stop lever arm, 12, by the catch, 37, the clutch gears being thus forced into engagement by the action of the rotary cam, 27. The stop lever, 10, is connected in the usual way with the stop levers, 11, around the circumference of the machine by means of connecting rods, 14, 32, etc., and a disc, 15.

During the few months that this new device has been on the market, it has met with a great deal of success, and is recognized as being an important improvement, as it facilitates greatly the starting and stopping of the gear driven type of braiders, which is now almost universally used by the manufacturers of braids.

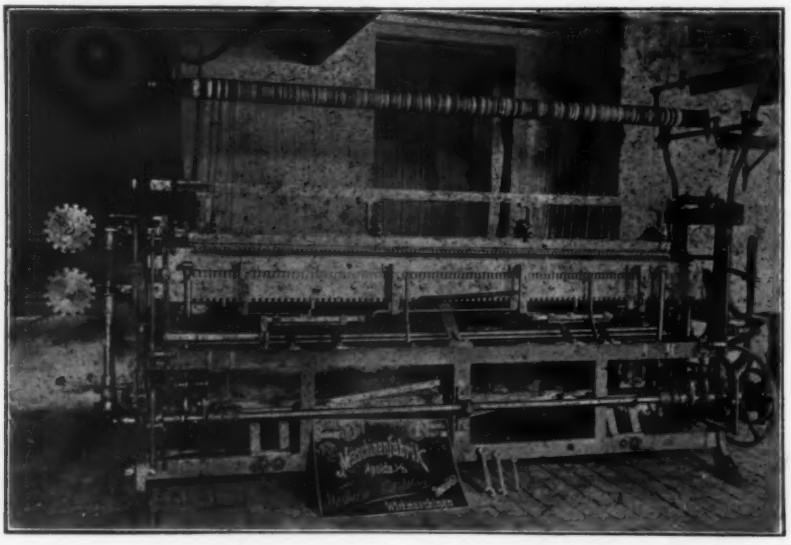
(To be continued.)

In 1906 Germany imported 22,283 tons of cotton yarns, against 19,814 in the previous year—an increase of 2469 tons, or 12½ per cent. The export of yarns reached 12,150 tons, against 12,270 tons in 1905—a decrease of 120 tons. The total import of cotton goods amounted to 8587 tons, against 6762—an increase of 1825 tons, or 27 per cent.; their export rose to 56,329 tons, against 51,606 in the preceding year—an increase of 4723 tons.

A WARP KNITTING MACHINE.

Various articles have been published in previous issues of the "Textile World Record" describing the working of the warp knitting machine in which illustrations were given of its construction and the principles of pattern combination. The accompanying illustration shows the latest machine of this kind, just patented by a German manufacturer and being introduced into the United States by Max Nydegger, of the Grosser Knitting Machine Co., 260 W. Broadway, New York City.

The needles have an up-and-down motion, similar to the double rib machine, with the difference that any number of needles can be put to work at one time, while those not required to form the pattern remain idle and hold the stitches. Two to six guide bars, taking the yarn from as many different warp beams, supply the needles with the yarn. Their action is also controlled by a chain. During the knitting operation one of the press plates will raise a certain number of the needles above the edge of the bed, then a guide bar throws a sling around those needles. A plain bar presses the needles



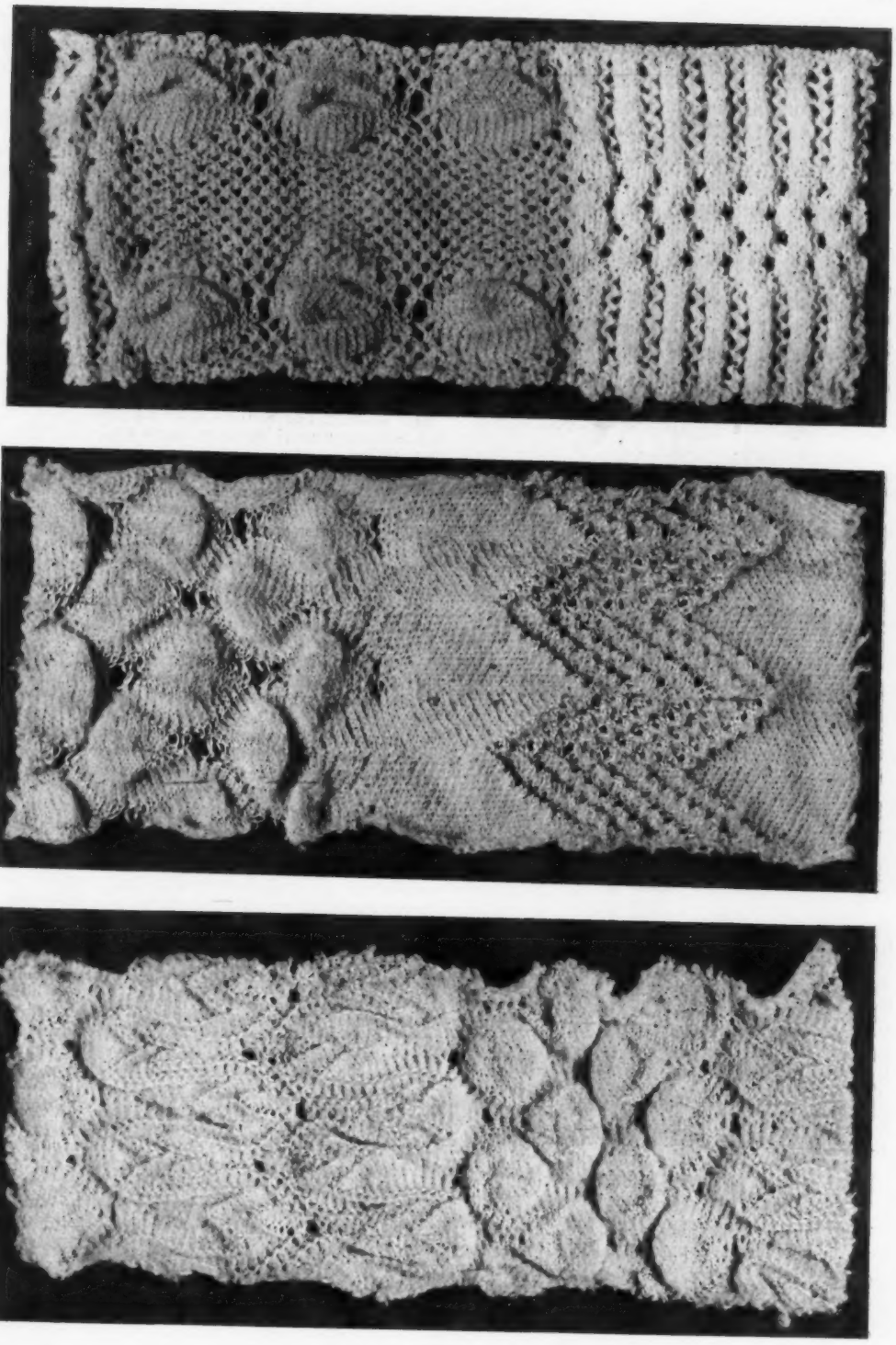
A WARP KNITTING MACHINE.

A description of the main working parts will give an idea of the principle of the mechanism. In the middle of the machine frame a long steel needle bed is suspended and held fast. This needle plate looks very much like the bed of a Lamb knitter and the wire latch needles placed in each slot are distinguished only by the long shank. The lower end of this needle bed is faced by different pattern press plates; from two to five can be brought into action for one design. These plates are cut on both sides and consequently present ten different working sides, allowing an unlimited number of design combinations. Each press plate is driven by a row of chain bits.

down again and casts the old stitch over the new one just formed.

Any pattern made on a single needle bar warp machine of the spring beard or latch needle style can be easily reproduced on this machine. The machine has a working width of 120 inches and will produce nearly as much work as the Raschel machine and about four times the output of a chain loom with spring beard needles. The accompanying illustrations show a few of the patterns made on this machine for shawls, scarfs, hoods, etc.

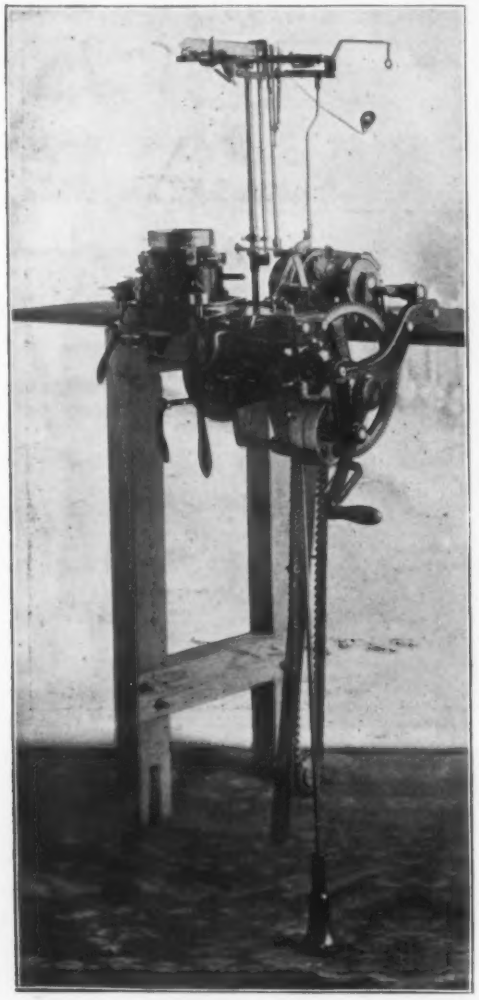
The production of artificial silk in 1906 is estimated at 5,280,000 pounds.



WARP KNITTING DESIGNS.

THE "BOSS" FULL AUTOMATIC KNITTING MACHINE.

A feature of this machine, built by the Boss Knitting Machine Works, corner Elm and Reed Streets, Reading, Pa., to which it is desired to call special attention, is the simplicity of construction which gives great



THE "BOSS" AUTOMATIC KNITTING MACHINE.

durability and reduces the wear to a minimum. The "Boss" machine runs at a high speed, 280 to 300 r. p. m. The parts are interchangeable. Any cylinder from 84 to 224 needles can be used in the same machine and the change can be made in one minute. One operative can tend from two to four machines on half hose and from 15 to 25 on ladies' hose. Among the claims made for this machine are the following: ease in learning to operate it; reduced needle breakage and seconds, and low cost of repairs. The machine is built in sizes from 2 1/4 to 4 inches and can be seen in operation at the works of the builders, Reading, Pa.

Cost Accounting.

BY J. LEE NICHOLSON.

Factory cost accounting should be devised in such a manner as to show not only the cost of the final product but also to give unerring indication of the exact working conditions and efficiency of all departments.

The cost of production and operation should be accurately known and should be properly tabulated, so that it may be compared with previous and subsequent costs. In this manner any variation in the cost of manufacture is immediately determined and any economy that may be necessary is at once brought to the attention of the executive, thus he is enabled to acquaint himself with all the details of the factory, to be fully conversant with the labor and material cost, and to know from day to day the results and profits of his business.

The man with an efficient cost system is working in clear day light while the one with a defective system, or without any, is groping in the dark and the advantage gained by the former is so great that it almost assures success from the outset.

It is not only necessary to know the total cost of the article manufactured, but the cost of each operation as well. This cost should include all factory expenditures, such as material and supplies, direct and indirect labor, department indirect expenses, general factory expenses, maintenance and depreciation and, in fact, all expenses of whatever description and kind that are connected with the plant. All indirect expenses, properly chargeable as cost of production, should be distributed according to actual expenditures and not according to past experience, as is usually done.

The cost records should clearly indicate the efficiency or inefficiency of all operating departments and should make it possible to prevent waste, shop errors, loss of time, or negligence on the part of employes.

It is advisable in many manufacturing establishments to have the cost records show the efficiency of the machinery. The cost records should show what it costs to maintain and operate each machine, as well as the capacity and working efficiency of each, in order that a proper record of production may be obtained. These records should be so arranged as to indicate whether the machines are 40, 50, 80 or 100 per cent. efficient. By this means, the decreased production is at once brought to light and the capacity of the plant maintained.

By supporting machine records with time records, the cost of operation may be obtained in such a way as to make it possible to operate most all departments on piece work prices based on comparative machine costs.

It should be remembered that with decreased production, indirect expenses remain practically the same, but being distributed over a lesser output, the cost of production is increased.

Many factory men think that while this principle applies to machine costs, or even in those cases where labor is paid upon a day basis, it would not apply in those cases where labor is paid upon a piece work basis. They neglect to note that while their direct labor cost is so much per article and does not vary, that their indirect expenses are not reduced materially by a decrease in production, and that, therefore, when these expenses are charged over a smaller output, that the charge against each article is increased, or in other words —that the article then costs more.

Indirect charges run from 50 to 300 per cent. of the direct charges, varying according to the class of business.

There are perhaps more mistakes made in applying indirect expenses than in any other elements connected with the finding of costs. The usual method of adding a certain percentage upon every article manufactured to cover all indirect cost is wrong in principle. The principal elements in indirect charges are department indirect, department supplies, general indirect and general supplies.

The accurate cost of any article cannot be known unless the indirect expenses are handled under these divisions, for instance, some departments have more indirect expenses than others. One department may demand more floor space than another. The number and salary of foremen may be greater in one department than in another. And in the same manner, such items as indirect labor, power and supplies vary considerably in the different departments.

Then again, all articles do not pass through all of the operating departments, and the charge for indirect expenses varies accordingly.

For the sake of illustration, let us suppose that there are a certain number of operating departments in a factory, say five. A certain class of product passes through all five of these operating departments. Another class of product passes through all but three of them. It is evident that by charging a fixed percentage for indirect expenses on all articles, that the product which passes through only three departments is being charged the same as the product which passes through five departments. In other words, the indirect expenses of the two departments through which this product does not pass is being charged up against the cost, the same as if it had.

By this, it can clearly be seen that unless indirect is applied (1) by departments, and then by general indirect, that the accurate cost cannot be shown, for, unless this is done, some articles will be charged with more than they should be and some with less than they should be.

In order to give a clearer insight into the methods of accounting for cost keeping, I will quote you classifications from an operating ledger and general ledger in a textile plant.

Under the general classification "Factory Expenditures," the operating departments would be

Sorting	Knitting
Scouring	Rib knitting
Carbonizing	Seaming
Dyeing	Boarding
Picking	Finishing
Carding	Packing
Spinning	Box department

The cost of operating each of the departments and the cost of each process through which an article passes is determined. And this cost includes not only the prime material cost and direct labor cost, but also all indirect expenses chargeable against each separate department. Such expenses would be as follows:

Indirect labor	Maintenance
Supervision	Rent
Supplies	Incidentals
Light, heat and power	

In addition to the expenses which should be charged against one department or another, there will be certain expenditures which are somewhat general in their nature and must be charged against all departments. To the department expenses, as stated before, there must, therefore, be added the pro-rata share of each department in these general indirect expenses, which are as follows:

Superintendent
Light, heat and power
Supplies
Freight, express and cartage, inward
Insurance
Taxes
Maintenance
Telegraph and telephone
Postage, printing and stationery
Salaries of office clerks
Factory office supplies
Incidentals
Depreciation

The product of such a plant would be classified as follows:

Men's garments
Ladies' garments, and
Children's garments

Each of these classifications would in turn be subdivided. For example, the subdivisions under men's garments would be:

Natural wool—mottled
Natural wool—mixed
Fine natural wool—mixed
Coarse natural wool—mixed
All wool—natural
Fine camel hair
Coarse camel hair
All wool camel hair
Plush—natural
Plush—solid colors
Miscellaneous

The sales in each of these subdivisions, together

with the cost of sales and the gross profit, would be shown.

Against the gross profit would be charged all selling and administrative expenses. The "selling" expenses would include

Advertising
Traveling expense
Freight, express and cartage, outward
Commission
Salaries of salesmen

and the "Administrative" expenses would include

Salaries of general officers
Legal expenses
Salaries of general office clerks
Interest
Merchandise discount
Postage, printing and stationery
Telegraphing and telephoning
Depreciation of fixtures and furniture
Insurance
Doubtful accounts
Incidentals

The "Amount" column, under "Gross Profit," shows the factory profit or loss. The figures in black represent profits and the figures in red represent losses.

Under "Expenses" is shown the selling and administrative expenses and the total of both, and under the caption "Net Profit" is shown the actual profit or loss by department, black ink figures representing profits and red ink figures representing losses.

This statement was the first monthly profit and loss statement after the cost system was installed, and I wish to state from my own personal knowledge, that all underlined figures in the column headed "Net Profit" have since disappeared from the succeeding monthly statements.

I call your attention to the amount "$5,021.08" being the net profit of the business for the month. This figure is what would have been shown had an inventory been taken and the books closed in the old fashioned way, and, generally speaking, was quite satisfactory to the officers of the company.

There are many who are unaware of the fact that one or two profitable departments of their factory

Statement of Profit and Loss. *For the Month ending May 31, 1906*

DEPARTMENTS	SALES		GROSS PROFIT		EXPENSES						NET PROFIT	
	Amount	Cost	Amount	%	Selling	%	Adm'ive	%	Total	%	Amount	%
A	24,065.33	22,864 51	1,200.82	5 2	1,177 52	5 15	1,214.95	5.4	2,392.47	10.5	1,191.65	5.2
B	6,933.77	4,990.20	1,943 57	39 0	256 99 "		269 47 "		526.46 "		1,417.11	28 2
C	165 78	180 47	14.69	8.1	9 29 "		9.74 "		19 03 "		33.72	18.3
D	103.51	178 60	75.09	42.1	9 20 "		9.64 "		18.84 "		93.93	53.0
E	6,810 63	4,388 86	2,481.77	57 3	238 79 "		233 76 "		472 55 "		2,009.22	46.2
F	825 97	563 31	262.66	57.3	29.01 "		30 42 "		59 43 "		203.23	36.0
G	4,495 36	2,829 92	1,665.44	46.7	145.75 "		152 82 "		298.57 "		1,366.87	48.3
H	716.06	862 15	146.09	17.0	44 40 "		46 55 "		90 95 "		237.05	27.5
I	19 03	4 65	14 38	31 9	.25 "		25 "		48 "		13.90	325.0
J	416 41	304 42	111 99	37 0	15 69 "		16.42 "		32 11 "		79.88	26.0
K	13 69	10 73	2.96	27 0	55 "		.58 "		1 13 "		1.83	17.0
L	121 19	98.91	22 28	22 5	5 10 "		5.33 "		10 43 "		11 85	12.0
Total from Operating	44,686.73	37,216 73	7,470 00	20 1	1,932.52	5.15	1,989.93	5 4	3,922.45	10 5	3,547 55	9.5
All other Inc. & Exps												
Commissions			556 49								556 49	
Miscellaneous			917 04								917 04	
From all Sources	44,686.73	37,216 73	8,943.53	.240	1,932.52	5.15	1,989 93	5 4	3,922.45	10.5	5,021.08	.135

The balance obtained by deducting these expenses from the gross profit would give the net profit or loss upon each class of the product.

I call your attention to a printed profit and loss statement, which I presume has been distributed among you. This statement is an actual copy of a profit and loss statement taken from the private ledger of a manufacturing establishment where a complete cost system is in use and such a statement is taken monthly from their books.

Under the classification "Departments," A, B, C, D, etc., represent the selling departments according to the various classes of product manufactured.

Under the general classification "Sales," the "Amount" column represents the sales of those different products for the month, and under the classification "Cost," the figures represented are actual costs of those classifications. This cost includes all factory expenses of every description and kind.

are paying the losses of others, that for one reason or another are not netting expenses. They are satisfied with the combined profits, which are small, not realizing that the large profits, which they are actually making, are used to pay the heavy losses of certain mismanaged departments of their business. It should be borne in mind that it does not require a thorough system to stop a leak that is apparent without any system, but it does require a good system to detect the invisible, yet never ceasing drip that wears out the foundation stone of a great business.

The profit and loss statement, previously referred to, shows how some departments are paying the losses of others. In this particular instance, the class of product manufactured under department "A" represented over half of the product of the plant and this department was always supposed to have been run at a profit until the cost system was introduced. The fact was shown, however, that it was operated at a loss.

Department A moreover was the department in which the sales were being pushed, as it was believed that it was here that the profits of the business were made. Department E and Department G, which were really the money makers, were comparatively neglected. One of the results of this information, which could only have been obtained by means of a cost system, was that the efforts of the salesmen were thereafter directed towards increasing the sales in departments E and G, and the profits of the business for the following months showed increases which were gratifying to the officers of the company.

At the same time steps were taken to correct the conditions which were shown to have existed in Department A.

The chief value of a cost system in this particular instance was the analyzed records from which the costs were made up and which appear in total on this statement.

It does not mean that everything in department A was made at a small loss, as many articles in that department were made at a good profit, but it does mean that the loss on certain articles more than counter-balanced the profit made on others and the particular value of the cost system was that it was possible to turn to the figures that composed the cost of $22,864.51 and learn just what articles were made at a profit and just what articles were made at a loss, and the reason why.

Where does profit end and loss begin? The commercial success of a business depends upon the answer, and that answer is found in the solution of the problems of cost accounting.

Equipment for a Small Knitting Mill.

Referring to "Cowpens'" question in your May issue, I should say that the yarn should be bought on cones and not in skeins, as skeins cost the same as the cones in the first place and then they would have to be wound at a cost of 1 1/2 cents a pound. This with an allowance of 1 pound of waste for each hundred pounds of yarn, would make a total of 1 3/4 cents above the cost of the yarn on cones. There would also be a saving of the machines for winding, power and floor space. This refers to plain black goods. If "Cowpens" intends making fancy goods then the yarn will have to be bought in skeins.

It is hard to approximate the cost for so small a plant not knowing whether the power is to be rented or a mill built. Following is an estimate for a mill making plain hose with rented power:

10 machines at $150,	$1,500
2 ribbers with stop motions at $115,	230
2 loopers at $50,	100
1 dry box, small,	175
12 doz. hosiery boards, 2 doz. each size at $2,	24
1 hand press,	200
2 dye tubs at $20,	40
1 small hydro-extractor,	175
1 40-h. p. boiler	
1 10-h. p. engine.	

It is much cheaper to rent power for so small a plant and have the dyeing done outside; this would take off the cost of the dyetubs, hydro-extractor, engine and boiler.

All the work could be done by the piece. This would require 2 toppers at 3 1/2 cents a dozen; 2 knitters at 4 cents a dozen; 2 loopers at 3 1/2 cents a dozen; 1 boy to look after the ribbers, and one girl to do the inspecting and mending. The mending only could be done for 5 cents a dozen, or 60 cents a day. If the power is not rented then the man who looks after the engine and boiler could also look after the dyeing. The finishing could also be done by piece work, or let to one man by contract for about 3 1/2 cents a dozen boxes ready for shipping. The bands, labels and boxes for the finisher would be about 22 cents a dozen for manufacturing. This does not include yarn, freight, or any other fixed charges, which should be kept as low as possible, not more than 8 cents a dozen for so small a plant, or say a total of 30 cents a dozen for manufacturing. The full cost per dozen is found by taking the cost of the yarn, commissions, discounts, freight, insurance, interest on capital invested, office sundries and mill supplies. None of the small details should be omitted as they are what make the profit or loss. Ten per cent. should always be added for seconds and waste; that is, on a selling price of 75 cents a dozen 7 1/2 cents should be added to the cost of manufacturing. Ravenswood.

Cashmere Hose.

Editor Textile World Record:

We would like some information regarding the manufacture of the cashmere hose of which we enclose a sample. We would like to know the number of needles, gauge, and diameter of the cylinder of the machines generally used and the method of finishing. Would the rib top have the same number of stitches as the body of the sock? What size of ribber should be used? They weigh about 2 pounds to the dozen. Carroll (892).

The rib top was knit on a 4 1/4-inch, 160-needle, 36-gauge machine; the foot or body of the sock was knit on a 3 1/4-inch, 148-needle, 36-gauge machine. On account of the small size of the sample sent me I cannot say with any degree of certainty how the sock was finished, but we have made a great many goods similar to this which we finished by giving them a thorough washing in soap and warm water, fulling them just enough to bring out the woolly effect. Considerable care must be used in the fulling, as too much will make

them felted. The rib top and the foot can have the same number of stitches by knitting both on a 160-needle ribber and a 160-needle footer, or on a 148-needle ribber and footer. It is possible to make a 2-pound sock from this yarn on either of these machines. Dan Bucklin.

The Waste in Cutting Underwear.

Editor Textile World Record:

We are sending a sample of the vests and pants (fleeced) we are making and would like you to advise us how much waste or clippings there should be in the various manufacturing operations, such as cutting out the necks, sewing in gussets and sleeves, etc. The goods weigh 7 pounds to the dozen on size 6. Nassau (866).

The only way the waste could be figured would be by following the work through the room and keeping account of all the trimmings, etc. It would be an impossibility to take such a garment as was submitted to me and give a detailed account of the waste on all operations. Only an estimate could be given and that could not be done on all operations such as seaming, etc., with any degree of accuracy. I should say from the yarn to the case that 120 dozen vests and 100 dozen pants, weighing an average of 7 pounds per dozen, could be made from 1,590 pounds of yarn. Cutting waste should not exceed 43 pounds, and the seaming and trimming waste about 45 pounds. This would leave the knitter a leeway of 7 pounds of yarn waste. Of course this is only an estimate; the only way to give the exact figures would be to go into the mill making the goods. Onota.

I have no data at hand that would give the quantity of waste or clippings that should be made in the various processes of manufacturing knit goods. The only data that I should consider accurate would be that obtained from my own experience, as one mill might make more waste than another on the same class and weight of goods, owing to the fact that one cutter might be more careful than another, and in seaming one operator might make more waste than another. The best method is to keep a daily record of the waste and clippings from the cutting and seaming and the other operations, and thus arrive accurately at the amount actually made in each.

Starting with the cutting as it comes from the knitting room, there will be two kinds of waste: the necessary waste, such as the pieces cut out in the pants, and the unnecessary waste, which is caused by defective knitting. It is this latter item that is quite likely to be different in every mill.

Let the two kinds of waste be kept separate and weighed each day, and from these daily records, tabulated at the end of each week and month, together with the record of the number of dozens of vests and pants cut, the average waste per dozen is found.

It may be argued, however, that while this record will show the amount of waste actually made, it will not tell the mill how much it "ought" to make; that is to say, if the quantity being made each day is more than it should be, or if the waste is down to the least possible quantity. This I think can be ascertained only by a close examination of the waste several times a day as it is being made.

One mill may say they are making so many dozens per day of vests and pants, and have so much waste or clippings—a quantity that may seem small to another mill, which is making a good deal more.

There may be a number of reasons for this; one mill may have the latest and most improved machinery; another may have a better class of help, may use a better quality of yarn, a better make of needles, and may do their own winding, while another may be running yarn bought on cones. All these factors tend to make more or less waste, and therefore a mill can be governed only to a certain extent by the amount of waste made by another mill.

Then in the seaming operation, all seaming machines with trimmers will seam goods with the least possible waste in trimming, provided the operator guides the work to that end. But where one operator will guide it easily and freely against the guide another will crowd the work up against it, resulting in more waste.

To ascertain the waste in seaming, let the waste made by each operator be collected and weighed daily, and a record kept, together with the number of dozens each operator has seamed. This can be done separately for pants, for gussets, for sleeves, for seaming in the sleeves, and for the pieces cut out from the necks.

From these records the mill gets exactly the amount of waste they are actually making. Then from the continuous daily examination of the waste itself, they will be able to tell whether they can reduce the amount of waste that is being made, or if it already is as low as it is possible to make it. Noel Howe.

What Size of Yarn?

Editor Textile World Record:

What size of 2-ply cotton should be knit on an 84-needle 3 3/4-inch machine for footing only? What gauge of looper should be used and how many dozen could a girl loop in a day of 9 1/2 hours? About what should be paid a dozen for looping? Crater (874).

A looper having nine points to the inch should be used on this class of work. An ordinary worker could loop 40 dozen a day; an exceptionally good one, 50 dozen. The price paid for looping would depend somewhat on local conditions. In places where female help is plentiful it could be done for three cents a dozen, while in a locality where help is scarce and competition strong it would be necessary to pay four cents a dozen. The average price, however, on this grade of work is three cents a dozen.

We are making half hose here on 84-needle 3 3/4-inch machines and are using 7 1/2s carded yarn, but this is a little light for the best results. For footing ribbed tops we would have to use heavier yarns and knit them considerably tighter.

There is no set scale to go by and it is possible to use several different sizes of yarn on a machine with good results. In most cases we have to make our goods of a certain weight. At present we are making them to finish four pounds to the dozen and also 2 1/2 pounds to the dozen, on the same machines. In one style we use one thread of 10s and one of 12s, while in the other we use a single thread of 9s. I mention this to show what can be done in this line.

The only rule to follow is this: The finer the yarn the more stock must be put into the goods and the tighter must be the stitch. By putting in more stock I mean that the machine must be set so as to increase the number of revolutions in the stocking to make up for tightening or shortening the stitch. I would suggest that "Crater" try two threads of single 8s, or one thread of 10s and one of 6s, which is equal to two threads of 8s. If this stitch seems loose, put in more stock and tighten or shorten the stitch until it fits the form. If it is too tight the tension can be loosened and the stock taken out until it fits the form. If it is desired to make half hose on these machines 6s or 2/12s would be the proper count to use. If the fabric seems too loose more stock must be put in and the stitch tightened until the required tension and size are obtained. Dan Bucklin.

To knit a 2-ply cotton on 84-needle 3 3/4-inch machine for footing, 2/11s will make a medium weight and 2/9s a heavy weight.

These goods should be looped on a ten-point looper; one girl should loop from 35 to 50 dozen per day. The price paid for looping would depend on the section of the country in which the mill was located, but would range from three to four cents per dozen. Profile.

Wisconsin. Sturgeon Bay. It is reported that Wilmer Jacobs and Frank Foster propose starting a knitting plant here.

Measurements for Hosiery.

Editor Textile World Record:

We have heard old hosiery men dispute about the rule for the measurement of hosiery and as we are new to the business we would like to know the correct rule for the measurement of the goods. All agree that the leg should be three times the

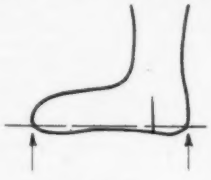


FIG. 1.

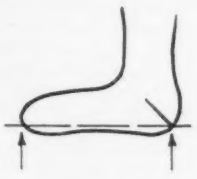


FIG 2.

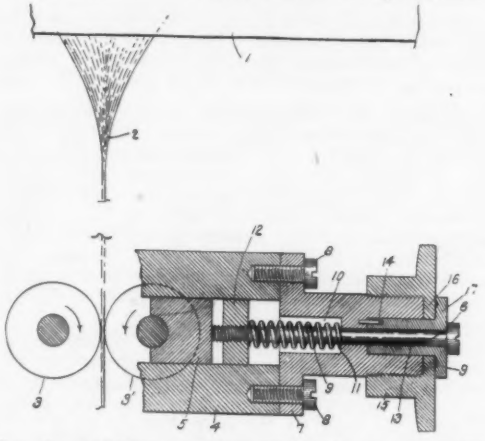
length of the foot, but we want to know from what point to measure the foot. Taylor (888).

The correct way to measure a fashioned stocking is from the tip of the toe to the end of the heel-joining seam, Fig. 1, and to measure a seamless hose the line should be from the centre of the heel to the tip of the toe, Fig. 2. Fillmore.

KNITTING PATENTS.

KNITTING MACHINES. Take-Up Mechanism for. 850,855. Bernard T. Steber, Utica, N. Y., assignor to Steber Machine Co., Utica, N. Y.

This invention relates to fabric take-up mechan-



ism for knitting or other machines, and provides, among other objects, means to permit the release of the fabric from the control of the take-up mechanism.

Referring to the drawing, which illustrates a knitting machine of any desired type, the body of the machine is indicated conventionally at 1, the fabric 2, issuing from it in the operation of the machine in the usual manner. It is to be noted, however, that the invention may be applicable to other mechanisms than knitting machines, it presenting a machine-product take-up mechanism useful in other relations.

KNITTING MILL NEWS.

New Mills.

*Alabama, Fort Payne. The new mill at this place will be a branch of the Davis Hosiery Mills, at Chattanooga, Tenn., and will be equipped with 100 knitting machines, 25 loopers, etc., with boiler and engine. All orders have been placed.

Massachusetts, Boston. Suffolk Hosiery Mills has been incorporated with capital stock of $30,000. Henry Suck, president; Andrew J. Kelly, 179 Summer St., Boston, treasurer. This concern has previously done an extensive business in hosiery manufactured for them on order, and the business has reached such a point that it has been incorporated to manufacture on their own account and a new mill is contemplated.

*Minnesota, Minneapolis. The Northland Knitting Co., reported incorporated recently, will probably not start in business until about the first of January.

*New York, Warsaw. The Brown Knitting Co., previously reported, will have capital stock of $50,000; John Brown, president; E. E. Rowe, treasurer; Geo. A. Clark, superintendent. They will make men's balbriggan underwear. Hecht & Campe will sell the goods. They will have 18 Gormly machines, 40 sewing machines, and dye in the roll.

*North Carolina, High Point. The Durham Hosiery Mill No. 3, practically a branch of the plant at Durham, is nearly completed. Operations will soon start making hosiery, with capacity soon to be increased to 7,000 dozen pairs daily.

*Pennsylvania, Jonestown. The Jonestown Hosiery Mill has awarded contract for a complete lighting and power transmission plant to be installed in the mill.

Pennsylvania, Philadelphia. Paul Glouton, formerly connected with the Oxford Knitting Mills of Barnesville, Ga., as superintendent, is starting up a plant for the manufacture of cotton, woolen and mercerized gloves at 466 North American Street with 9 latch and 3 spring needle knitters and 5 sewing machines, electricity being used as the power. He will use 24s and 30s cotton, 2/60 mercerized and 40/1 worsted and woolen yarns. The production will be sold direct.

Pennsylvania, Philadelphia. The Cedar Brook Knitting Mills Co., has asked for a charter with a capital of $25,000. The company which occupies a one story brick building on Lime Kiln Pike above Washington Lane in Mt. Airy, has for its officers Enoch Holland, president and superintendent, and Albert T. Flavell, treasurer and buyer. They are manufacturing women's swiss ribbed vests on 3 McMichael & Wildman knitters and 3 sewing machines using 1/26 and 1/24 C. P. yarn on cones. The plant is run by gas, and the production sold through Muir & Malone, 253 Church St., N. Y. The company reports many orders on hand and also states that the capacity of the plant will be doubled within the next six months.

Pennsylvania, Philadelphia. Arthur R. Stirnau and Samuel Ginsburg, under the name of the Girard Hosiery Mills, are equipping the fourth floor of the Davenport Mills at Mascher and York Sts. with 30 knitters, 4 loopers and 1 welter for the manufacture of women's plain cotton hosiery, using 16/1 to 20/1 C. P. yarn on cones and 60/1 splicing yarns. Messrs. Stirnau states that the plant will be increased to 60 machines as soon as the first lot of 30 is delivered. The superintendent is P. M. Yost. Arthur R. Stirnau will do the buying. The production will be sold direct. Plant will be in operation within two weeks.

*Wisconsin, Appleton. A new mill now in operation at this place is known as the Saxony Knitting Works, Emil Zwisker, proprietor. This plant is run on ladies' fancy mittens, gloves, cardigans, sweaters, hosiery, using worsted, Saxony and wool yarns. Product is sold direct.

Enlargements and Improvements.

*Alabama, Alexander City. The Russell Manufacturing Co. will install 2,736 new spindles in addition being built for spinning their own yarns.

Connecticut, Glastonbury. The Glastonbury Knitting Mill is to be increased by an addition to the present plant. A new 200 h. p. engine will also be added.

Illinois, Rockford. Work is progressing on erection of a new building for the Burson Knitting Co.

*New York, Amsterdam. The new four-story addition to the Blood Knitting Co.'s plant is in full operation. This company manufactures the paper boxes used.

New York, Fort Hunter. E. H. Key, manufacturer of woolen and worsted sweaters, gloves, toques, mittens, etc., with equipment of 4 knitters and 1 sewing machine, has recently purchased the old Methodist church, which he will remodel for the purpose of using it as a knitting mill. The plant will be largely increased after its removal to its new quarters.

North Carolina, Raleigh. It is reported that the Martin Hosiery Mills are planning addition of new machinery.

*North Carolina, Winston. Work is progressing on the new mill for the P. H. Hanes Knitting Company. This building will be 105 by 80 feet, four stories. This mill will be connected with the present plant by a bridge.

*Ontario, Stratford. The new addition to the Stratford Hosiery Co.'s plant is nearly completed. Additional machinery will be installed. Part of the new addition will be used for storage purposes.

Pennsylvania, Coopersburg. A number of new knitting machines are to be installed in the Gabriel Hosiery Co.'s plant.

Pennsylvania, Dorrancetown. Fifteen new machines have been instaled in the Werkheiser Hosiery Mill.

Pennsylvania, Philadelphia. The Argood Hosiery Co., reported by us some time ago as removing their plant from Riverton, N. J., to this city at Mascher and Lehigh Avenue, where they are manufacturing women's and infants' cotton and

woolen seamless hosiery on 10 knitters, are about to add 10 more knitting machines which they expect to have on hand by July 1st.

Pennsylvania, Philadelphia. The Ellis Hosiery Company who recently removed their knitting plant from Philadelphia and incorporated it with the plant of S. J. Levy which they purchased several months ago, are now fitting up a dyeing, printing and finishing plant to be operated in conjunction with the mill and expect to have it in operation by July 1st. The main offices of the company are located at 533 Market Street.

Pennsylvania, Souderton. It is reported that the capacity of the Souderton Knitting Mills has been increased by addition of 25 knitting machines.

*Pennsylvania, York. The Crystal Hosiery Mills Co., recently reported incorporated with capital stock of $50,000, to continue operating plant of same name, have just about completed a new dye house, which will be in operation the end of this month. This plant is equipped with 56 knitting and 14 embroidery machines. H. A. Free is president; J. A. Lichty, secretary and treasurer and Wm. J. Diven, superintendent.

*Pennsylvania, York. The Crystal Hosiery Mills Co. has recently been chartered to operate a mill of the same name. J. A. Lichty is treasurer and buyer. They are building a new dyehouse, which is just about completed, and will be in full operation by the end of June. Lyman & Clark Co. of New York sell the goods.

Wisconsin, Ripon. The Ripon Knitting Works have recently increased the capital stock from $50,000 to $100,000.

Mills Starting Up.

*Mississippi, Columbus. The W. H. Rowe Knitting Company of Huntsville, Ala., has leased the plant formerly run by the Columbus Underwear Co. Operations will be resumed July 1st.

*Mississippi, Columbus. The W. H. Rowe Knitting Co. advises that although the plant of the Columbus Underwear Mills have been leased fully equipped, the yarn department only will be run for the present.

*New York, Oswego. The Lastlong Underwear Co., recently reported as removing from Brooklyn to this place, expect to begin production about July 1st, making men's balbriggans, using 16s to 24s yarn. H. A. Baker is president and treasurer and S. H. White, superintendent. Bacon & Co. sell the goods.

*Pennsylvania, Nanticoke. Operations have been started by the Beaver Knitting Co., James Davis, manager.

Facts and Gossip.

*California, Los Angeles. The Pacific Knitting Mills have been incorporated with capital stock of $25,000. J. C. Bentz, W. Isenberg and T. McDougall are mentioned as the incorporators. This is probably a new name for the recently started Angelus Knitting Mills.

*Connecticut, Torrington. The trustees of the Belfast Mesh Underwear Co. have been authorized to dispose of the machinery, stock and all property, appraised at $28,000.

Georgia, Eatonton. John R. Hudson of this place has leased a three-story building which he will equip with machinery for manufacturing hosiery. Operations will start with capacity of 100 to 150 dozen hose daily.

Massachusetts, Wakefield. The Harvard Knitting Mill will close Aug. 23d and resume operations Sept. 3d.

New Jersey, Williamstown. It is reported that Philadelphia parties have rented Rammel's Hall and will equip same for making hosiery.

*New York, Mohawk. The sale of the Mohawk Valley Knitting Mills has been adjourned until June 29th. There were but few bidders at the recent sale (June 11th) and it was decided by receivers not to accept bid of $31,000 made by Atty. James Conkling.

Pennsylvania, Philadelphia. The Salts Textile Co., operating 26 knitters on astrachan, stockinet, Jersey cloth, eiderdowns and fleece linings in the Fretz Building, are taking down the machinery preparatory to removing it to the main mill in Bridgeport, Conn.

Pennsylvania, Reading. The Kehl-Ellis Co. has been incorporated with capital stock of $100,000 and will operate the Hawk Knitting Co.'s plant.

Personals.

Wm. Herman, formerly superintendent of the Wright Health Underwear Company, has accepted a position at Amsterdam, N. Y.

John Lilly, employed in the spinning department of the New England Knitting Company, Winsted, Conn., has severed his connection with that company after forty years' service.

Charles F. Ford, superintendent of the Midland Knit Goods Company, Mankato, Minn., has severed his connection with that company after five years' service.

J. T. Lyons has accepted a position as superintendent of the Narragansett Textile Company, Pawtucket, R. I., manufacturers of high grade underwear. He was formerly employed as assistant superintendent at the Oneida Knitting Mills, Utica, N. Y.

John Robal, overseer of spinning for the Laurence Webster Company, Malone, N. Y., has severed his connection with that company and accepted a position at the Clayville Knitting Company, Clayville, N. Y.

William Hazlitt, formerly overseer of carding at the Stittsville Knitting Company, Stittsville, N. Y., has accepted a position at the Wiley Manufacturing mill at Catskill, N. Y.

David Mullen has accepted a position as superintendent of the Hickory Hosiery Mills, Hickory, N. C. He was formerly employed at the Lynchburg Hosiery Company, Lynchburg, Va.

Charles W. Adams has accepted the position as overseer of knitting with the Blackstone Stocking Company, Central Falls, R. I. He was formerly employed at Radcliffe Brothers, Shelton, Conn.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

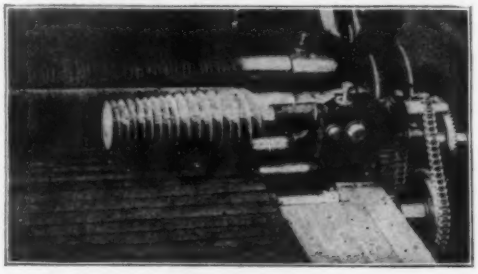
Fiber Spools. The Cell Drier Machine Co., Boston, Mass., are introducing the Rhode Island vulcanized fiber head and metal barrel spool for general mill work. The merits of this spool have been conclusively demonstrated by the test of actual mill conditions. A description of it appears in another part of this issue.

Drawing-In Hook. L. S. Watson, Leicester, Mass., is the American agent for a drawing-in hook which has been brought out in Germany and is described on another page of this issue.

Autogenous Welding. Worcester Pressed Steel Co., Worcester, Mass., are agents for a process of welding metal that originated in France and has been patented in this country. The welding is accomplished by heating at a high temperature with a blow pipe the two edges to be joined together. In this way the two parts are fused together and become one solid piece, the joint having from 90 to 100 per cent. of the normal strength of the material. The process is capable of many applications in mill repair work as well as in machine building.

Mercerizing Machine. Joh. Kleinewefers Sons, Crefeld, Germany. A machine for mercerizing cotton in the loose state. A perforated expansion cylinder is placed inside a perforated copper drum, and the material is packed between the two. The drum is then revolved and the centrifugal force presses the inner cylinder against the material, holding it firmly so that it cannot shrink. The mercerizing liquor is run into the cylinder and carried by centrifugal force through the inner cylinder, then through the cotton and out through the perforations in the outer drum.

Preventing Fine Ends. Wilhelm Salberg, M-Gladbach, Germany. A device shown in the accompanying illustration for preventing fine ends on woolen finisher cards. A screw



driven positively is set on each side of the feed table and coming in contact with the stock just before it enters the feed rolls tends to draw it sideways and thus increase the weight of the end threads.

Luster Finish. J. P. Bemberg, Barmen, Germany. An improved process for imparting a silk-like luster to textile fabrics. An account of the process appears in another part of this issue.

Fabric Coating Machine. Carl Kuebler, Dusseldorf, Germany. A machine for coating fabrics with dyestuffs or other liquid material, an account of the process appearing in another part of this issue.

Hank Twisting Machine. S. Russell & Sons, Leicester, England. A machine for twisting hanks of yarn in a form convenient for packing.

Paper Spindle. Emil Claviez, Adorf. An improved spindle for making paper yarn from strips of paper.

FIBER SPOOLS.

A durable spool, one that will not warp or break under the ordinarily rough handling in the mill, is what is believed to be found in the Rhode Island fiber spool.

It has been placed upon the market to overcome the many inherent disadvantages of wooden spools. In the first place, this fiber spool is remarkably strong and durable. It is practically impossible to break it

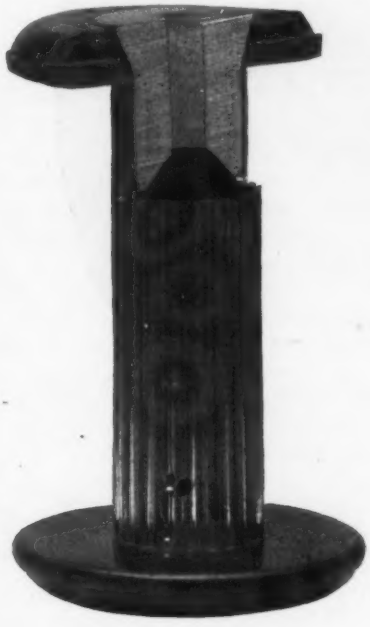


FIG. 1.

in ordinary use as it can be dropped around and even thrown around without injury. In the second place, since no glue is used in its construction and since it is thoroughly waterproofed there is no trouble from warping or coming apart. Then again, the fiber heads have no grain to splinter.

The spool is made of a corrugated tinned steel barrel with dove-tailed ends under which the fiber bushings are locked and keyed and the whole spool made complete by shrunk and waterproofed bushings, which are forced into the ends under heavy pressure. Fig. 1 illustrates this construction and it will be seen that no matter how much pressure is used to force the heads apart, the metal barrel ties them together and the plugs or bushings are only wedged in the harder by the pressure applied. The corrugations on the barrel besides giving the necessary strength and stiffness, provide a good surface for starting the yarn and a surface upon which it will not slip.

All who have to do with spooling, twisting, warping or beaming machinery will realize the immense advantage of having spools that will stand the rough usage they often

FIG. 2.

get in a mill. It is a cause of much loss to have spools break when dropped on the floor, and when full of yarn. Then again, there is much trouble with wooden spools caused by the splintering of the heads. Fiber makes an ideal substance for this purpose as it has no grain, and moreover, the very efficient process of waterproofing used gives a substance which will stand steaming, as well as the ordinary moisture in the mill. Another advantage of this spool is that, while it is much stronger than the wooden spools, it is also as light or lighter. Then again, when desired, it is possible to secure a longer traverse and therefore a greater

capacity for the same over all length. It is surprising what a large amount of money is sometimes tied up in spools; the continual replacing necessary in order to keep up the supply is an important source of expense.

different sizes and are prepared to meet the requirements of the various mills interested by furnishing spools of the right size and proportions to meet the particular work or requirements of the user. In general there

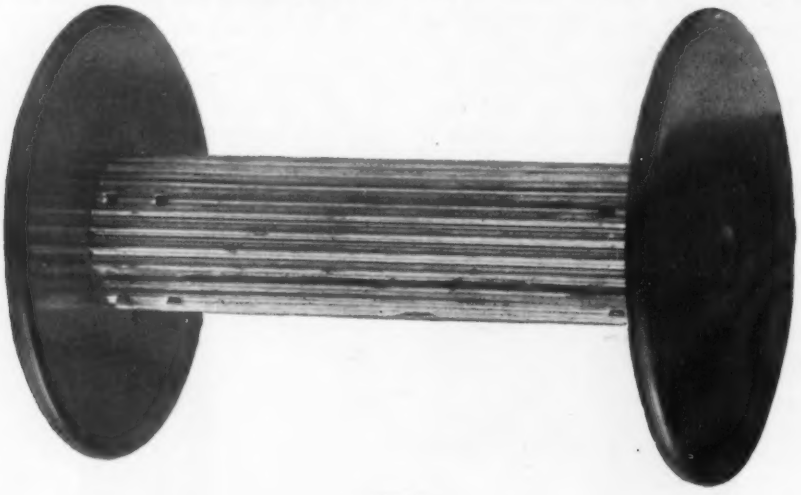


FIG. 3.

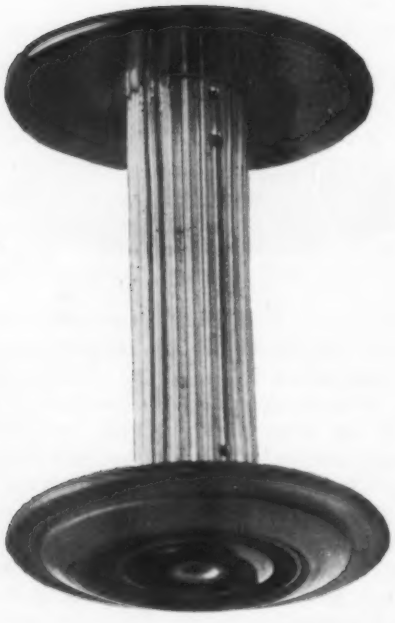


FIG. 4.

The manufacturers of this spool, the Rhode Island Fiber Spool Company, Providence, R. I., make them in a great many

are two styles of spools: one made with a single head; Fig. 3; and the other, Fig. 4, with an extra reinforcing disc which is ordinarily used to give the same over all length and traverse as wooden spools used at present. Where the reinforcing disc is used the heads are made thinner than they would be otherwise, and are dished in a similar manner to the spokes of a wheel.

Referring again to the practical indestructibility of this spool, the manufacturers state that it will stand without injury all ordinary usage for a very long period of time. It can be thrown about and will still be as good as new. It is practically impossible to injure it except intentionally.

This spool is sold by the Cell Drier Machine Company, 84 State Street, Boston, Mass., and Taunton, Mass. It may also be obtained by Southern mills from the Greensboro Supply Company, Greensboro, N. C.

The seven leading cotton manufacturing States are, according to the number of spindles employed: Massachusetts, South Carolina, North Carolina, Rhode Island, Georgia, New Hampshire and Connecticut.

INSURANCE AGAINST LOSS OF PROFITS.

The Maryland Casualty Company of Baltimore, Md., is selling a new form of insurance which covers the loss of profits incidental to the stoppage of a plant by the explosion of a fly wheel. Almost everybody is familiar with fly wheel insurance. The insurance company in return for a premium pays for the property loss which results from the explosion of a fly wheel. This covers personal injuries and property of others for which the policy holder may be liable. This form of insurance has met the approval of manufacturers generally. Perhaps one reason is because of the inspection service which the insurance company furnishes by its expert mechanics making quarterly inspections of the fly wheels and the engines to which they are attached. A large part of the benefit is in the prevention of loss rather than wholly in reimbursement.

Fly wheel accidents will occur, however, in spite of the most careful inspection and attention. When one does occur the property loss may not be greater than the loss in profits due to the plant being idle while repairs are made or new machinery installed. The latter is perhaps the most significant feature. For instance, if a large part of a worsted spinning mill were to be demolished, the frames being destroyed, the mill might suffer losses greater than the property loss, before new frames could be delivered. Under the same conditions these losses would be sufficient seriously to inconvenience a business which is absolutely solvent as regards ordinary contingencies.

Heretofore there has been no insurance against this loss. By the new form of the Maryland Casualty Company the loss resulting from inability to produce goods is paid in addition to the amount paid for property loss. No deduction is made from the face value of the policy to provide for the indemnity payable under this new endorsement. It is really insuring time and opportunity, which wait for no man, whether his reason is a fly wheel explosion or something else. The Maryland Casualty Company will gladly furnish full particulars on application.

A WARP DRAWING-IN HOOK.

This tool, manufactured in Germany by Felton & Guilleaume, Muelheim, consists of 3 blades: a, b_1 and b_2, the latter two are riveted together at the bottom end and the blade, a, is inserted about 1 inch and held by same.

WARP DRAWING HOOK, TWO-THIRDS FULL SIZE.

The hook serves the purpose of drawing the warp-threads into the reeds and is used in the following manner:

The blade, a, of the hook is passed through between two wires of the reed in order to grip the thread by the loop, c. In doing so the adjacent stick of the reed is forced between the two blades, a and b_1, beyond the bottom end of the blade, a, so that it is now between the two blades, b_1 and b_2. The hook is then withdrawn in order to draw the warp-thread between the sticks of the reed and consequently the reed stick between b_1 and b_2 leaves the latter again, but owing to specially shaped projections at the bottom part of the blade, a, and cuttings, d, in the blades, b_1 and b_2, the stick is now forced between the blades, a and b_2, so that it is now on the other side of the blade, a.

When the hook is passed forward again to draw the next thread into the reed the following stick of the reed enters the hook between the blades, a and b_1, and the operation described before is repeated. The hook must be passed forward in a straight way and no pressure must be made upon the sticks of the reed, neither to the one nor to the other side.

Thus the hook advances automatically from one stick of the reed to the other without the possibility of missing.

A second loop is made in the blade, a, so that the hook can be used for drawing from the left to the right and vice versa.

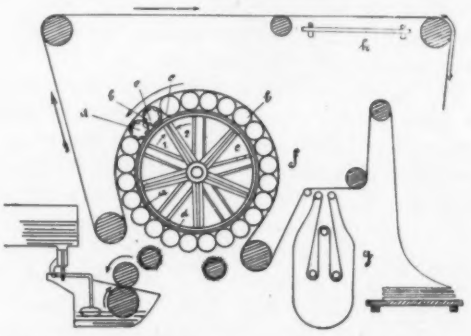
LUSTER FINISH ON TEXTILE FABRICS.

A process recently brought out in Germany for imparting a silk-like luster to textile fabrics consists in pressing the goods in the ordinary manner and then printing the fabric with a mixture impervious to moisture and pressing between plates having fine corrugations or points. In this condition they are subjected to the action of steam, which removes the luster from between the raised parts of the pattern plate while the remaining portions of the goods retain the high luster. When the corrugations or points are so close together as not to be visible to the naked eye a uniform silky luster is obtained.

Various mixtures are used in printing, such as a solution of cellulose acetate in chloroform and phenol. Nitrocellulose dissolved in aceton with the addition of fatty acid salts gives a good result. Likewise a mixture of paraffine and aluminum, also a mixture of paraffine and stearate of aluminum thinned with benzine or chloroform is found to be well adapted to this process. The pressing and subsequent steaming under pressure are done in the usual way.—Oest. Wollen und Leinen Industrie.

A MACHINE FOR COATING FABRICS.

This machine is intended for applying a uniform coating of dye or other material to the surface of cloth. A number of rollers, c, are set in bearings around the cylinder, e. The smaller rollers carry pinion gears which mesh with the larger gear on the cylinder shaft. This large gear is driven independently of the cylinder so that the motion of the smaller rollers can be varied independently of the speed of the main cylinder.



These rollers are coated with the dye by a suitable device, shown in the illustration. If desired the cloth is passed through a steaming apparatus, g, before going to the machine. It is then wrapped around the rollers from which it passes to the drier. It is claimed that the dyestuff or other liquid material is applied more evenly by this machine because of the large number of small rollers with which the cloth comes in contact. The machine is designed by Carl Kuebler, of Dusseldorf, Germany.—Oesterreich's Wollen und Leinen Industrie.

In 1850 the mills of the United States consumed only half a million bales of cotton; in 1906 the amount was over 4 million bales.

Dyeing, Bleaching, Printing, Etc.

DISCHARGING AND STRIPPING WITH HYRALDITE.

BY JOHN C. TEBBETTS, Jr.

Winner of the Textile World Record Gold Medal at the Philadelphia Textile School, 1907.

DISCHARGING.

There is undoubtedly no style in cotton printing and textile printing in general which has developed to such an extent as has that known as the discharge style, which consists in the production of white or colored designs on a colored ground, which has first been produced by dyeing the material in the piece. In a large measure this great development is due to the introduction of the now numerous range of direct cotton dyes of the Diamine, Congo, Titan, Benzo. etc., series. These colors as a rule can be easily discharged, and by their employment a wide range of fine effects can be produced. Among the oldest examples of the discharge style is; using bichromate of potash as the agent, the production of white, yellow, and red designs on indigo dyed cloth. Similarly we have the production of white on alizarin dyed goods, using hypochlorite of soda as the agent.

Now the principle which underlies the discharging of the direct dyes is that certain agents act as reducing agents in destroying the azo group contained in the dyestuff and thereby reducing it to its constituent elements. The latter being colorless (leucobase) as well as very soluble, are easily washed away. As but natural, some are more easily reduced than others, and thus we find that while a discharge of a certain known strength will produce an excellent result with one dyestuff, it will not qualify with another, and thus printers who worked this discharged style have to know the specific adaptation of the discharging agent to the dye. Working with a simple discharge, the white design is the resultant, but it is possible and very feasible to produce colored designs by adding to our discharge paste some coloring matter which is not affected or altered in any manner by the discharging agent. Many basic dyes lend themselves readily to this work, because, as a rule, Hyraldite discharges have no action upon them; so by their employment, either alone or in combination, an almost unlimited range of color effects can be produced.

Now coming down to our subject, it is a well known fact that purely a hydrosulphite is especially notable for its "non-keepable" qualities. It reacts with indigo-sulphonic acid and ammoniacal copper solution, and any attempt to evaporate to dryness results in rapid decomposition. In short, a mere hydrosulphite is most unstable, and formerly when used by the printer must needs be made up at time of use. Such a condition or handicap in its employment naturally leads to experimental work to produce such a needed and comparatively cheap compound in permanent and solid form.

The first step to prepare such a compound was made by Grossman in 1898, but he encountered many difficulties and it was not until 1902 that we had the preparation, Hyraldite, a compound of sodium hydrosulphite and formaldehyde, patented by Louis Descamp. Hyraldite itself is a white crystalline solid, fully soluble in water and capable of being dried at 100° C without decomposition. It is now manufactured and put forth on the market by Leopold Cassella & Co., under the trade names of Hyraldite A, W W, and C W extra, these differing practionly in their strength. This compound is especially distinguished by the very remarkable property of not acting as a reducing agent under ordinary circumstances. For instance, it does not act upon indigo-sulphonic acid or ammoniacal copper solution, and solutions of it can be evaporated to dryness without decomposition. At higher temperatures, however, for example, steaming, it is split up into components, producing a very vigorous reducing action. This action is exerted when the Hyraldite acts as

a discharge, needing only proper and sufficient steaming to obtain the desired effect.

As regards the discharging range of Hyraldite with respect to different coloring matters, it may be stated that this formaldehyde-hydrosulphite compound discharges either in white or colors, para red, napthylamine claret, or other developed colors dyed on cotton or linen, dyeings of nearly the whole range of diamine and other direct dyes on cotton, etc., also in white and colors, dyeings of azo colors on wool and silk, and it may even be used as a resist for aniline black. Basic colors are not suitable for this purpose, although a few, e, g., New Phosphine G, Tannin Orange R, and Napthindones BB and T can be discharged by means of Hyraldite.

When Diamine colors are used, the goods are dyed in the usual manner and very thoroughly rinsed. Ofttimes failure to rinse well causes the resulting whites to be cloudy, possessing a greyish cast. Generally speaking, the diamine colors on cotton can be discharged by means of an oxidation discharge, for example, the so-called Chlorate discharges. More commonly, however, they are discharged by means of a reducing agent. Such agents are: Hyraldite, Zinc Dust and Tin Crystals.

For the obtainment of white discharges, the paste or solution is made with Hyraldite and thickened with neutral starch tragacanth, which from experience has proven to be the most suitable and advantageous thickening agent. However, if desired, ordinary gum or British gum may be employed. After printing, the goods are thoroughly dried and steamed for a few minutes at a temperature of 215° to 220° F. with perfectly air free and dry steam. According to A. Sunderland (of L. Cassella & Co.) it is advisable after washing the goods to add a small amount of alum (5 to 8 ounces per 10 gallons) to the first rinsing bath.

Hyraldite serves also as a discharging agent for colored discharges with certain of the mordant colors, and also for color effects which are produced by the fixation of basic dyes and pigments or earth colors on the fibre, by means of albumen.

The so-called ice colors or azo colors, that is, EG paranitraniline red, etc., produced on the fibre, are dischargeable with Hyraldite in the same manner as diamine colors. The identical discharges are applicable, although more Hyraldite must needs be employed; for, as a rule, they are less easily dischargeable than the diamines. One style which has met with favor is a brown with white and red effects, obtained by combining Paranitraniline Red with Diamine Nitrazole Black. According to a patent procured by Messrs. Cassella & Co., it is produced in the following manner: The material is first dyed with a bottom of Diamine Nitrazole Black B, and then, after dyeing, padded with Beta-Naphthol. It is now dried again and coupled with Diazotized Paranitraniline or with Nitrazole C, when a brown shade is obtained. The Paranitraniline Red and also the diamine color are removed by the Hyraldite, while the chlorate discharge destroys only the diamine dye and leaves the Paranitraniline Red intact.

Next the discharging of union goods will be briefly dealt with. Union material intended for discharge work is dyed in one of the following ways: (X) The wool and cotton may be dyed together with diamine colors, and if necessary, shaded with acid colors; or (Y) the goods may be wool dyed in an acid bath, and then cotton dyed in a lukewarm bath with diamine colors. In many cases a cold bath is more preferable. The following diamine dyes may be recommended for this method of dyeing: Diamine Yellow N, Diamine Rose, Diamine Red 10 B, Diamine Bordeaux B, Diamine Brown M, Diamine Gold, Diamine Fast Red F, Diamine Sky Blue, Diamine Green, Diamine Violet N, Diamine Black EH and HW, Diamine Fast Red F. The goods having been dyed, they are thoroughly rinsed, and printed with a suitable discharge. For the production of whites, a mixture of gum mucilage and Hyraldite (one to one) in equal proportions has proven very satisfactory. However, for the requirement of colored discharges, the constitution of the discharged paste will vary according to the amount of wool and cotton on the face of the fabric. Thus, should the wool content predominate the fabric is treated, from a dis-

charging standpoint, as if it were all wool, but should there be more cotton than wool, the pastes recommended for cotton are employed.

Discharging of Woolen Goods. When upon woolen piece goods a fine white discharge is desired, it is most essential that the material should be as white as possible. Therefore a thorough and careful bleaching must be resorted to if the goods in question have the slightest yellowish cast, and this is carried out in the usual manner by means of hydrogen peroxide or stoving. After this operation the goods are very sparingly chlored, washed most thoroughly and dyed with colors well adapted for their easy dischargeableness. In this connection it is well to note that no more acid should be employed when dyeing the acid colors than is absolutely necessary for their fastness or requirement of the shade.

After dyeing the goods are dried and for white discharge effects are printed with a paste consisting of Hyraldite, wheat starch, tragacanth, zinc white, glycerin, and water in certain proportions. The preparation of typical discharge pastes will be treated later. As the pieces leave the printing machines they are dried, either by running over a set of drying cans or else being run directly into a drying chamber. Afterwards they are steamed. This steaming requires from three to five minutes as a rule, and the temperature of the steam should be about 215° to 220° F. Above all, however, the steam must be dry, else condensation will take place and streaky goods will result. The steaming now having been concluded, the material is washed in cold water, hydro-extracted and dried. In some cases the whites come up a trifle cloudy, and so it proves necessary to clear them up. This is accomplished by tinting the white with a very small amount of Formyl Blue, Brilliant Milling Blue, or Formyl Violet.

Besides the production of white discharges, plain and fancy colored effects are ofttimes required. Therefore, in such cases, coloring matters which resist Hyraldite, the ground color remover, are mixed with the discharge paste. The above mentioned can therefore be employed for colored discharge work. In like manner yarn and slubbing can also be discharged.

As typical discharge pastes and method of preparation of the same, the following are especially recommended for discharge work.

DISCHARGING OF WOOL—WHITE DISCHARGES.

400-500 parts by weight of Hyraldite (W) are stirred to a paste with 475-600 parts by weight of gum mucilage 1-1. It is then heated for about 25 minutes to about 160° F., stirred until cold and strained. Instead of gum mucilage, neutral starch tragacanth thickening or British gum will serve very well.

After printing the goods are lightly dried and steamed for 10 to 20 minutes at slight pressure. The material is then soured off and thoroughly rinsed.

COLORED DISCHARGES.

15-30 parts by weight of dyestuff are dissolved in 300 parts by weight of water, boiled up with 225 parts by weight of British gum into which about 375-420 parts by weight of Hyraldite are stirred (while cooling).

The colors should be well strained. After printing the goods are steamed for 8 to 20 minutes at slight pressure and then treated as above.

DISCHARGING OF SILK—WHITE DISCHARGES.

200-400 parts by weight of Hyraldite (W) are stirred to a paste with 400-600 parts by weight of gum mucilage 1-1. This mixture is then heated for 15 to 30 minutes to about 150° F., stirred until cold and well strained. The printed and dried goods are steamed for a few minutes, and afterwards soured off in a dilute bath of hydrochloric acid, washed, and brightened in an acetic acid bath.

COLORED DISCHARGES.

25-50 parts by weight of dyestuff are dissolved in 300-325 parts by weight of water, boiled together with 250 parts by weight of British gum, into which while cooling 375-400 parts by weight of Hyraldite (W or CW extra) are stirred.

After printing the lightly dried goods are steamed and treated in the same manner as in their aforementioned cases.

DISCHARGING OF COTTON DYEINGS—ICE-COLORS: WHITE DISCHARGES

375-400 parts by weight of Hyraldite (A) are dissolved by heating in 200 parts by weight of water and stirred up with 400-425 parts by weight of neutral starch tragacanth thickening. The latter is prepared in the following manner:

100-120 parts by weight of wheat starch; 450-480 parts by weight of water; 400 parts by weight of tragacanth thickening (65 to 100; 8 to 15 parts by weight of glycerin. This mixture is boiled together for 1/2 hour, and stirred until cold. In this connection ordinary or British gum may be employed.

COLORED DISCHARGES WITH DIAMINE COLORS.

25-30 parts by weight of dyestuff; 300-320 parts by weight of water; 25-30 parts by weight of phosphate of soda, and 230-250 parts by weight of British gum are boiled together and when cold 250-265 parts by weight of Hyraldite (A) dissolved in 120-130 parts by weight of water are added.

The idental discharges are applicable for the diamine colors as for ice colors. However, the diamine colors are much more easily dischargeable and in consequence considerably less Hyraldite is required.

Also as regards the discharging of cotton dyeings it may be stated that with slight variation in mode of preparation colored discharges may be produced with basic and mordant colors.

The principal advantages of the Hyraldite discharge over other discharges are that the printing paste does not adhere to the engraved parts of the printing rollers, and damage the engravings, that the discharging itself is an extremely simple process and that the fibre is not weakened even on prolonged steaming.

STRIPPING.

On the addition of acids to Hyraldite, or by the action of very hot steam, hydrosulphite is liberated, which possesses a very strong reducing action; and upon this property is founded the application of Hyraldite as a stripping and discharging agent. It should be known, however, that Hyraldite will by no means discharge all dyestuffs. Several of the diamine yellows, the immedial colors, wood colors, eosin dyes, basic colors, and a very few of the acid dyestuffs are scarcely effected by it; while on the other hand, certain other dyes, although stripped to a considerable degree, are not altogether destroyed.

As regards the actual practical stripping, the work is best carried out in wooden kettles, preferably with a false bottom containing the steam pipes, otherwise the steam pipes must first be covered with cotton to prevent the spotting of the goods through contact. The amount of Hyraldite to be used will vary according to the depth of shade to be stripped, also upon the stripping degree required, as many times it so happens that it is unnecessary to completely remove the color. As a rule the bath is made up with 1 to 9 per cent. of Hyraldite and 1 to 9 per cent. of acetic acid, figured upon the weight of goods; the exact amount, of course, depending upon requirements. The Hyraldite is first dissolved in warm water, and then added to the lukewarm bath, the acetic acid being put in just before entering the material. The goods are worked for a short time at the entering temperature and then gradually raised to the boil, and boiled for 15 to 25 minutes.

Using the above percentages of Hyraldite and acetic acid, 1 to 9 per cent., I find better results to be obtained by adding another portion of both Hyraldite, 1 to 2 per cent., and acetic acid, 2 to 6 per cent., just before the material is removed from the bath. The goods are afterwards washed in cold water, and again in hot water, and are now ready for redyeing.

In the stripping of pieces dyed with alizarin colors, the goods, as a rule, act differently according to the dyestuff used. Some are more or less destroyed while others are reduced, but on exposure to the air regain their original color. For instance, baths were made up with 2 per cent. of the following dyestuffs: (1), Alizarin Blue SAE; (2), Alizarin Blue JR; (3), Alizarin Orange; (4), Alizarin Green C, and dyed in the usual

manner, rinsed and dried. Separate baths were then made up containing 6 per cent. of Hyraldite and 4 per cent. of acetic acid on the weight of the dyed woolen samples. The material was worked lukewarm for 20 minutes, and then gradually the bath was brought to the boil and continued at that temperature 18 minutes. Just prior to the removal of the pieces from the bath 3 5/10 per cent. more of Hyraldite and 3 per cent. of acetic acid were added and the boiling continued for two minutes longer.

Afterwards the material was washed in cold water, then in hot water and dried. The piece dyed with Alizarin Blue SAE (which is really an acid dyestuff) appeared to be admirably stripped, though later, on exposure to the air, it somewhat regained its original color. Alizarin Blue JR, however, seemed to be completely reduced, and upon drying possessed a very light yellow tinge. Alizarin Orange, similar to Alizarin Blue SAE, appeared to regain part of its original color on exposure, while Alizarin Green C was almost wholly reduced, coming up a light orange color. Thus it is the wisest and safest method, when a large lot is to be stripped, and which is known to have been "alizarin" dyed, to make a sample test, in order to ascertain to what degree the shade is effected.

In a similar test Hyraldite is applied in the stripping of dyed cotton goods. For the most part one meets with material dyed with direct colors, and also with basic and sulphide colors. As nearly all the direct colors are sensitive to the action of this hydrosulphite, goods so dyed are generally easily and quickly stripped. With regard to sulphide colors, reduction takes place, the blues and blacks become yellowish or brownish on coming from the reducing bath, but on exposure to the air, they slowly regain and assume their original color. Some of the basic dyes are destroyed, while others are only reduced, and these on coming up from a stripping bath and being exposed to the air assume their original color. In many cases the depth of shade is scarcely impaired at all.

In the same manner union goods may be stripped with Hyraldite when dyed with acid and direct colors. In some instances, however, the cotton is found to have been dyed with sulphide of basic colors. Should such prove to be the case, a soap bath will often be advantageous for removing the basic colors, while Hyraldite can be employed for the wool, should the shade not have been sufficiently reduced by the soap.

DYEING MACHINES.

The following interesting account of the various dyeing machines built by Obermaier & Co., Lambrecht, Germany, appears in a recent issue of Uhlands Technische Rundschau:

This firm was the first to patent a machine for dyeing yarn on spools. The apparatus has now been developed till it serves equally

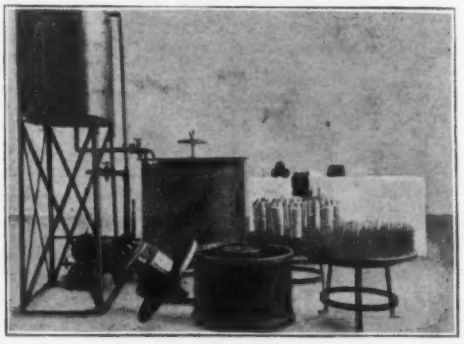


FIG. 1.

well for dyeing yarn on the skein, on spools, material in the form of slubbing and loose stock. From 110 to 220 pounds of yarn and one-half the amount of loose stock is colored at a time. For a large production the machine is built with three compartments accommodating from 330 to 660 pounds at each charge. After dyeing the material is extracted in special machines so that no disturbance of the material is necessary. The process of dyeing is made continuous by using a reserve cylinder so that one cylinder can be charged while the dyeing process is being carried on in the other.

Fig. 1 shows plates carrying perforated spindles adapted for dyeing yarn on cops or spools. It is claimed that by this arrangement the dyer is able to handle the yarn in either form at a greatly reduced cost by merely changing the carrier plates. The

machine is adapted for yarn on either spools or cops. Skein yarn and loose stock can also be colored in the same machine.

A machine for dyeing warps on beams is shown at Fig. 2. It consists of a round kier and truck for carrying the yarn beam to and from the machine and an arrangement for rinsing the material and reclaiming the liquor, and a pump. The operation of the machine is as follows: The beam is carried by the truck and placed horizontally in the kier, the truck remaining in the machine during the dyeing process. The beam is set firmly on the cones of the machine, the cover is closed and the beam held in place by suitable spindles. The pump is then put in operation and the liquor forced alternately in different directions through the yarn, the change being made by a four-way valve. After dyeing the liquor is carried partly by centrifugal pump and partly by air pressure to the reservoir above.

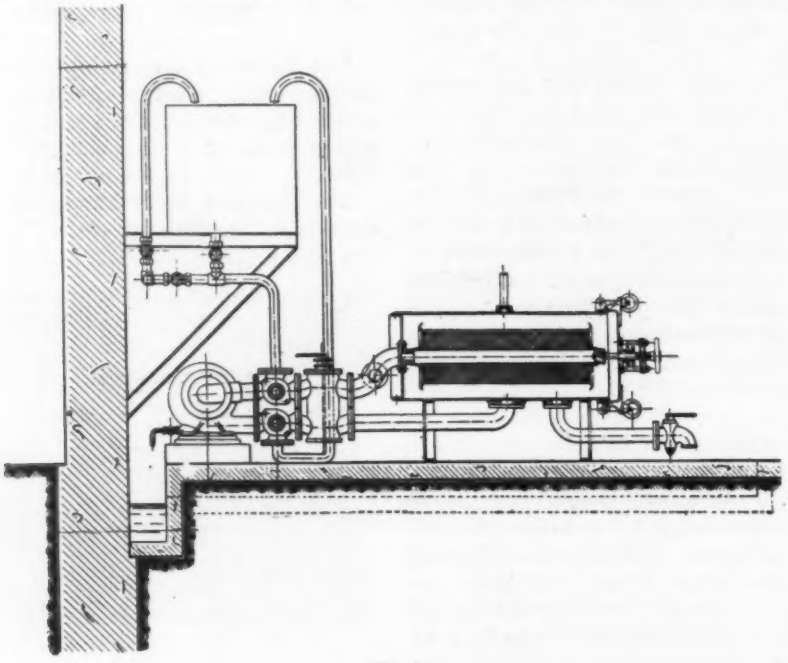


FIG. 2.

Fig. 3 shows a cross section of another type of Obermaier dyeing machine adapted particularly for loose stock and rags. It is built in different sizes to accommodate 110 to 440 pounds at a charge. The essential feature of this machine is that the stock is held stationary and the dye liquor forced through it. In this way the felting of the fibre is completely avoided and the wool or cotton comes from the machine in practically the same condition as when it entered. The machine consists of a tank for receiving the material and a space underneath for holding the dye liquor, which is circulated by a pump as shown at Fig. 3. The material after being placed in the machine is pressed down by the perforated cover, k, the pump is then

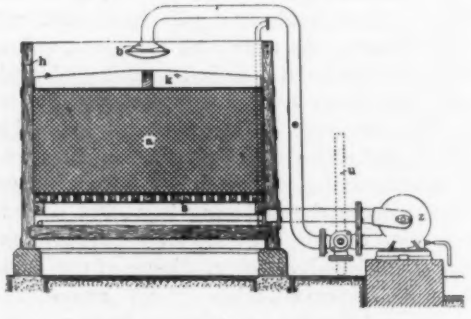


FIG. 3.

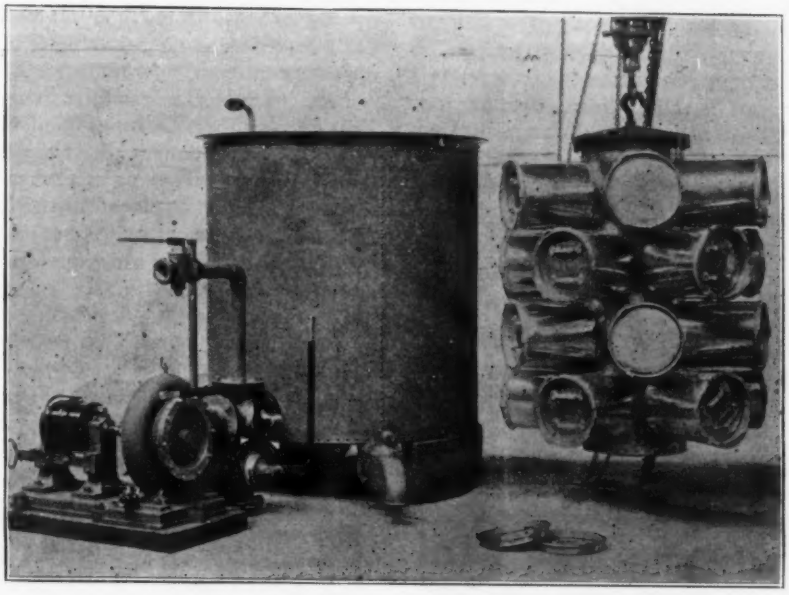


FIG. 4.

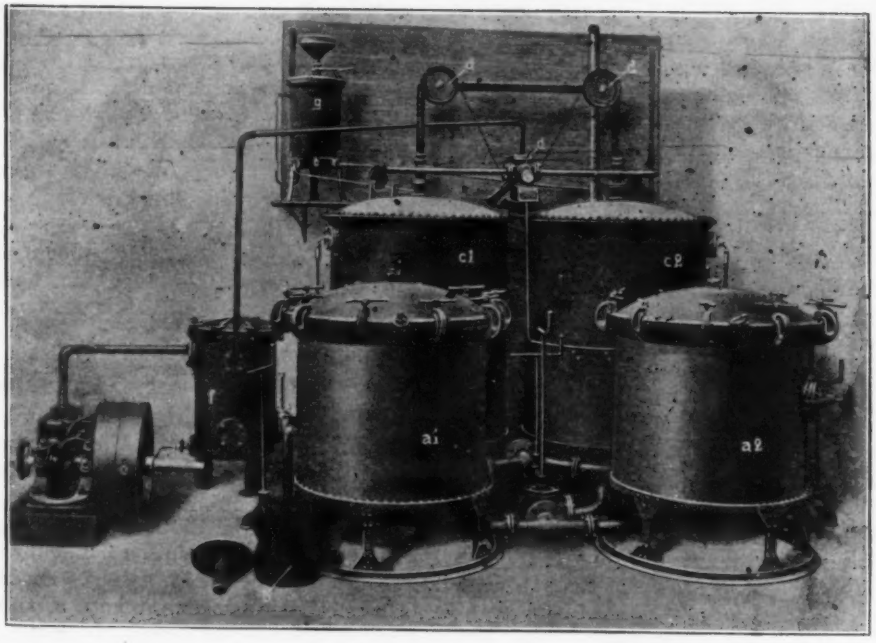


FIG. 5.

started and the machine requires practically no attention until the dyeing process is ended. The liquor is heated by a steam coil. The cotton can be taken direct from the bale and colored in the machine, requiring no

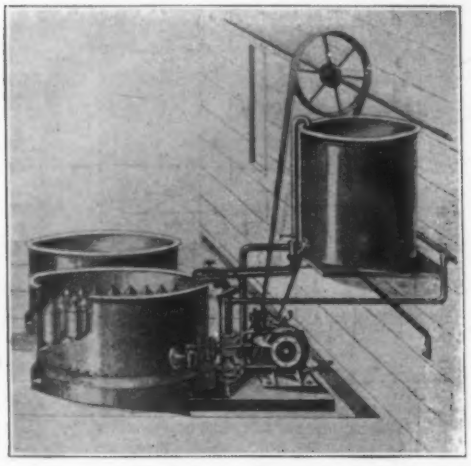


FIG. 6.

preliminary opening. The machine can also be used for washing, soaping, diazotizing and after treatment with chrome and other chemicals. The color can be sampled during the process. A uniform distribution of the dye liquor is obtained by the overflow pipe, which can be swung to one side when the machine is being charged or emptied. There is an arrangement by which the liquor can be forced to a storage reservoir above and the liquor uniformly distributed from the top of the cover. It is then sucked through the material to the bottom and the operation repeated indefinitely.

Fig. 4 shows a worsted top dyeing machine that in different forms has been built by the Obermaier Company for twenty years. It consists of a kier and a dyeing "revolver" for accommodating the spools. There is a special pump for circulating the liquor and an arrangement for reclaiming the liquor and for rapid rinsing of the material. Each dyeing cylinder is charged with a spool carrying 11 pounds of top and enclosed with a perforated top. The "revolver" is then placed in the machine and the circulation started by the pump and continued till the dyeing process is finished. This machine is built in different sizes having one to 20 dye cylinders.

Fig. 5 shows a machine invented by a French engineer, Dumons, and built by the Obermaier Company under the name of Dumons-Obermaier dyeing machine. The material to be dyed is placed in the kiers, a^1 a^2; b^1 is a cop carrier, c^1 c^2 are reservoirs for the dye liquor; d, is a device for automatic-

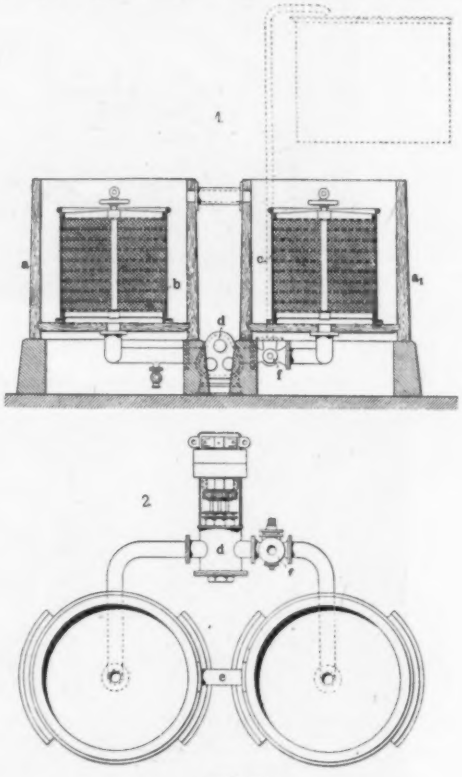


FIG. 7.

ally changing the direction of the circulation; e, is an air pump; f, an air tank for regulating the air blast; g, an inlet for introducing the dyestuff and chemicals into the machine. The top is placed in the kiers a^1 a^2, and the reservoir, c^1, filled with the dye liquor and closed air tight. An air blast is generated by the air pump, e, and regulated in the pressure tank, f. This presses the liquor out of the reservoir, c^1, through the stock into the kiers, a^1 a^2, and into the other reservoir, c^2. As soon as the reser-

voir, c^1, is emptied the air pressure is changed by a device, 1, and the liquor is forced from the reservoir, c^2, in the opposite direction through the stock in the kiers, a^2 a^1, then back into the tank, c^1. When the reservoir, c^2, is empty the pressure is again changed and the direction of the liquor reversed. Additional dyestuff and chemicals can be added through the tank, g, during the dyeing process.

Fig. 6 shows a machine for dyeing roving and slubbing on flyer bobbins. It is built to hold 100 bobbins, or about 100 pounds of stock. The bobbins are placed in pairs on the spindles and enclosed in the machine. The circulation is obtained by a centrifugal pump and the liquor is forced alternately in different directions through the stock. In general, however, the reversal of the current is found to be unnecessary as uniform results are obtained by forcing the liquor through the stock in one direction only. It has been found that reversing the liquor is apt to disturb the stock and cause open spaces which allow the liquor to pass through the machine without reaching the individual fibres. These disadvantages are avoided in the machine shown at Fig. 6, as good results are obtained by a continuous movement of the liquor in one direction.

Fig. 7 shows a machine built to supply the demand for a cheap machine to dye loose wool and sliver and woolen and worsted yarn on spools and cops. It consists of two wooden tubs with perforated false bottoms and connected with the circulating pump with an arrangement for reversing the crank automatically so that the material is subjected to the current alternately in both directions. The material is arranged in thin layers separated by a braided lattice work, which results in very uniform colors with an alternating current. The wool is held firmly in position on all sides, thus preventing any disturbance during the dyeing process.

Color Cards.

Oxamine Dark Brown; Continental Color & Chemical Co., New York City.

Sample card 1206 showing 5 and 3 per cent. dyeings on cotton and union material of Oxamine Dark Brown G and Oxamine Dark Brown R.

Cotton Brown R V N; Continental Color & Chemical Co., New York City.

Sample card 1205 showing 3 per cent. dyeings of Cotton Brown R V N on cotton and union material.

Shades on Woolen Cloth; Continental Color & Chemical Co., New York City.

An elaborate folder, No. 1406, having 144 samples of woolen piece goods dyed in a wide variety of combination and self shades.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 97.

Tan Color on Cotton Yarn.

Compound Shade on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Toluylene Orange G O O.
½ lb. Triazol Brown G O O.
½ lb. Triazol Brown D.
(Geisenheimer & Co., 189 Front St., New York.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Enter at 180° F. and dye at a boil for one hour.

This combination of color will be found to produce an excellent and fashionable shade of tan.

Recipe No. 98.

Dark Blue on Cotton Yarn.

Chlorazol Dark Blue B Extra on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Chlorazol Dark Blue B Extra.
(Read Holliday & Sons, 7 Platt St., New York.)
20 lbs. Glauber's or Common Salt.

Dye with closed steam.

Chlorazol Dark Blue B Extra is especially useful in combination with blacks and other blues for a range of navy blue shades. It possesses good fastness to light, acids, alkalies and washing and has good leveling properties.

Recipe No. 99.

Orange on Cotton Yarn.

Tetrazo Orange T G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Tetrazo Orange T G.
(American Dyewood Co., 154 William St., New York.)
25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Tetrazo Orange T G produces orange shades possessing ordinary fastness. In union dyeing it colors cotton and wool equally. It is of special interest for the dyeing of artificial silk.

Recipe No. 100.

Grey on Cotton Yarn.

Diamine Fast Grey R N on 100 lbs. cotton yarn. Prepare the dye bath with

½ lb. Diamine Fast Grey R N.
(Cassella Color Co., 182 Front St., New York.)
20 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Diamine Fast Grey R N will be found to give an excellent shade of grey on cotton material.

Recipe No. 101.

Black on Worsted Yarn.

Hematine Crystals on 100 lbs. worsted yarn. First mordant the yarn with

3 lbs. Potassium Bichromate,
2½ lbs. Tartar,

entering at 120° F. and mordanting at a boil for 1½ hours. Wash and dye in a bath made up with

5 lbs. Hematine Crystals.
(Thos. Leyland & Co., 53 India St., Boston.)
1 lb. Fustic Extract.

Enter at 140° F. and dye at a boil for 1 to 1½ hours, adding

1 lb. Acetic Acid

towards the end of the dyeing.

Hematine Crystals will be found to give an excellent shade of logwood black.

Recipe No. 102.

Red on Woolen Yarn.

X L Carmosine 6 B on 100 lbs. woolen yarn. Prepare the dye bath with

2 lbs. X L Carmosine 6 B.
(Read Holliday & Sons, 7 Platt St., New York.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Dye in the usual manner for acid colors.

X L Carmosine 6 B has excellent leveling and penetrating qualities and is adapted for both self and compound shades. It is also specially adapted for woolen printing. Its fastness to light, washing, stoving, carbonizing and alkalies is very good.

Recipe No. 103.

Blue on Worsted Yarn.

Alizarine Blue N on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate,
2 lbs. Tartar,

entering yarn at 120° F. and mordanting at a boil for 1 1/2 hours. Wash, and then dye in a bath made up with

4 lbs. Alizarine Blue N.
(C. Bischoff & Co., 451 Washington St., New York.)
1 lb. Acetic Acid.

Dye at a boil for one hour and then exhaust color from the bath by the addition of

4 lbs. Acetic Acid.

Alizarine Blue N applied in this manner gives a desirable shade of blue which possesses excellent fastness.

Recipe No. 104.

Black on Worsted Yarn.

Hematine Paste on 100 lbs. worsted yarn. First mordant the yarn with

3 lbs. Potassium Bichromate,
2½ lbs. Tartar,

entering at 120° F. and mordanting at a boil for 1½ hours. Wash and dye in a bath made up with

10 lbs. Hematine Paste.
(Thos. Leyland & Co., 53 India St., Boston.)
1 lb. Fustic Extract.

Enter at 140° F. and dye at a boil for 1 to 1½ hours, adding

1 lb. Acetic Acid

towards the end of the dyeing.

Hematine Paste will be found to give an excellent shade of logwood black.

Recipe No. 105.

Blue on Cotton Yarn.

Eboli Blue 6 R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Eboli Blue 6 R.
(C. Bischoff & Co., 451 Washington St., New York.)
20 lbs. Common Salt.

Boil for one hour.

Eboli Blue 6 R gives a blue of a decidedly reddish tone, which possesses the common properties of the direct cotton colors.

Recipe No. 106.

Black on Union Cloth.

Puretone Black on 100 lbs. cotton and wool union cloth. Prepare the dye bath with

20 lbs. Common Salt.
10 lbs. Glauber's Salt.

Enter material at 100-120° F., run a few minutes at this temperature, and then add

5 lbs. Puretone Black (previously dissolved in warm water).
(F. E. Atteaux & Co., 174 Purchase St., Boston)

Run ½ hour at 120° F., ¼ hour at 170° F., and then boil ½ hour. Allow to steep in the gradually cooling bath for 30 minutes.

Puretone Black is very fast to acids, alkalies and calendering. It exhausts well and no standing bath is needed. When pressed, especially on cotton, it becomes somewhat brown, but its natural shade is restored in a few minutes upon cooling.

Recipe No. 107.

Dark Green on Worsted Yarn.

Amine Black Green B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Amine Black Green B.
(Berlin Aniline Works, 213 Water St., New York.)
3 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 150° F. and dye at a boil for one hour.

Amine Black Green B possesses excellent fastness to light and good leveling properties.

Recipe No. 108.

Tan Color on Cotton Yarn.

Compound Shade on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Toluylene Orange G O O.
¾ lb. Triazol Brown G O O.
¼ lb. Triazol Brown D.
(Geisenheimer & Co., 189 Front St., New York.)
25 lbs. Common Salt.
1 lb. Soda Ash.

Enter at 180° F. and dye at a boil for one hour.

This combination of color will be found to produce an excellent and fashionable shade of tan.

Recipe No. 109.

Orange on Cotton Yarn.

Tetrazo Orange B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Orange B.
(American Dyewood Co., 154 William St., New York.)
25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Tetrazo Orange B gives shades very fast to light and washing. It is fast to acids and may be used to shade colors which are to be diazotized and developed, or aftertreated with metallic salts.

Recipe No. 110.

Dark Blue on Cotton Yarn.

Chlorazol Dark Navy R Extra on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Chlorazol Dark Navy R Extra.
(Read Holliday & Sons, 7 Platt St., New York.)
20 lbs. Common or Glauber's Salt.

Dye with closed steam.

Chlorazol Dark Navy R Extra is especially useful in combination with blacks and other blues for a range of navy blue shades. It possesses good fastness to light, acids, alkalies and washing and has good leveling properties.

Recipe No. 111.

Yellow on Cotton Yarn.

Sulphur Yellow C G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Sulphur Yellow C G.
(W. F. Sykes & Co., 85 Water St., New York.)
2 lbs. Sodium Sulphide.
10 lbs. Common Salt.

Enter at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Sulphur Yellow C G gives a bright shade of golden yellow possessing the properties characteristic of the sulphur yellows. Sulphur Yellow C G possesses great coloring power.

Recipe No. 112.

Black on Worsted Yarn.

Hematol Paste on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
1½ lbs. Blue Vitriol.
2 lbs. Tartar.

Enter at 140° F. and boil for one hour. Wash, and then dye in a bath made up with

12 lbs. Hematol Paste,
(W. F. Sykes & Co., 85 Water St., New York.)
1 lb. Extract of Fustic,
⅛ lb. Sulphuric Acid,

entering at 140° F. and boiling for 1½ hours.

When applied in this way, Hematol Paste gives an excellent dyeing of jet black.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Georgia, West Point. The West Point Mfg. Company of West Point, Ga., will begin the construction of the No. 2 mill, previously reported, during the next week or ten days. The new building will be located about two miles from the old plant and it is intended to make it the centre of a new mill village. Lockwood, Greene & Company have made plans for the new mill which is to have 30,000 spindles and manufacture goods of various widths and weights similar to the production of the old mill. Electric power will be used and will be derived from a new power plant on the Chattahoochee River at West Point. Chas. T. Main of Boston has charge of the construction of the power plant and it is estimated that 3,000 h. p. will be developed. The old mill will be changed over to electric power. It is expected that the new mill will be making goods by January 1st.

Massachusetts, East Boston. The specifications for the machinery for the proposed Foss Cotton Mills have been given out by the engineers, Messrs. Lockwood, Greene & Co., 93 Federal St. The specifications call for about 30,000 ring spindles, 30,000 mule spindles, combers and about 1,100 looms. The officers have not yet been elected.

Massachusetts, Hudson. The Hudson Converting Co. has leased building owned by William H. Brigham and will soon start operations making cotton yarn and converting the waste into any marketable product. William J. Ryder will be manager of the plant.

Massachusetts, Salem. Thos. J. Gifford, 1 Lincoln Ave., is about to start with 25 looms on weaving shoe lining. He is in the market for yarns from 14s to 18s on the loom beam.

*Massachusetts, Taunton. Machinery is being installed in the new plant for the Taunton Narrow Fabric Co. Shoe strings and other similar fabrics will be made.

New Jersey, Passaic. The Passaic Cotton Mills have started work on erection of a new building, 180 by 90 feet, and will equip same with machinery for making fire hose and auto tire fabric from Sea Island and Egyptian cotton.

*North Carolina, Fayetteville. The machinery has nearly all been installed in the Victory Manufacturing Co. and the plant will soon be in operation.

*North Carolina, Gastonia. The Flint Manufacturing Co., capitalized at $125,000, will start operations in their new plant Aug. 1st. G. A. Gray is president of this company, L. F. Groves, treasurer and J. R. Withers, superintendent. Plant is to have equipment of 5,400 ring spindles for making yarns, combed Peeler, tubes, skeins and cones. Product will be sold through Chas. J. Webb & Co.

*North Carolina, Manchester. The McNeill Manufacturing Co. has been incorporated with capital stock of $200,000 and proposes to erect a plant for manufacturing print cloths, 10,000 spindles and 300 looms. W. D. McNeill (Raeford) is president of the company.

*North Carolina, Monroe. The Everett Cotton Mills, Inc., capitalized at $55,000, will make high grade hosiery yarns, on cones. Chas. Iceman is president and agent for the company and J. L. Everett, treasurer. Product will be sold through C. E. Riley & Co., Boston, Mass., New York and Philadelphia.

*North Carolina, Rockingham. The Hannah Pickett Mills, capitalized at $200,000, will make hosiery yarns. The plant, which will be started up Sept. 1st, will be equipped with 10,080 ring spindles. R. L. Steele is president of this company and W. B. Cole, treasurer and buyer.

*North Carolina, Statesville. Work will start on erection of the new buildings for the Paola Cotton Mills, recently organized, as soon as material can be secured. This plant is to be equipped with 5,000 spindles for making yarns, 20s and 30s, single and ply. Eugene Morrison is president of the concern; W. D. McLelland, vice-president and N. B. Mills, secretary and treasurer. Operations are expected to begin about the first of the new year.

*North Carolina, Stony Point. The Stony Point Manufacturing Co. has been organized with capital stock of $125,000 and will establish a plant for manufacturing yarns, 14s to 24s, single and ply. M. K. Steele is president of the company, A. L. Watts, vice-president, and N. F. Steele, superintendent. Plant will be equipped with 2,580 spinning spindles.

*Ontario, Hamilton. The new plant of the Eagle Spinning Mills, Ltd., is equipped with 5,000 mule spindles for making hosiery yarns, cotton mule spun, 6s to 24s. Plant is operated by electricity. J. R. Moodie is president and treasurer of the company and Louis Carter, superintendent.

Pennsylvania, Philadelphia. It is reported that F. J. Siebrecht, in conjunction with other parties, are about to start up a plant for the manufacture of narrow fabrics, the mill to be located in the vicinity of Lansdowne, Pa., and operate about 15 looms.

Pennsylvania, Philadelphia. Joseph Haggerty is operating 3 sewing machines on the sewing and finishing of Turkish towels, wash rags, tidies, etc., at 2420 Waterloo St. He uses 2/16, 2/18 and 2/20 cotton yarns on cones.

Pennsylvania, Philadelphia. A plant for manufacturing Turkish towels has been established in

the Bromley Bros. Mill Bldg., Jasper and York Sts., by the Lafayette Mills Company. Twelve looms will be installed.

*South Carolina, Clearwater. Work has been started on making additions as well as necessary changes to the old Clearwater Bleachery, for the Seminole Manufacturing Co., which has been incorporated with capital stock of $500,000 to operate same. They will make sheetings, shirtings, drills and prints, and will operate 20,000 spindles (ring) and 520 wide looms. Product will be sold direct and through W. H. Langley & Co., N. Y. Thos. Barrett, Jr., is president of the company; Chas. Estes, treasurer and A. H. McCarrel, superintendent. They expect to begin operations about Oct. 15th. The work is under supervision of Mr. McCarrel, who is also superintendent of the Aiken Mfg. Co. (Bath, S. C.), near by.

*South Carolina, Rock Hill. Operations will probably start about July 1st by the Aragon Cotton Mills. This plant will start running with 10,240 spindles and 300 looms. Electricity will be the motive power.

*Virginia, Strasburg. The building has been completed for the Strasburg Textile Company, recently reported incorporated with capital stock of $100,000. This plant will be run on hammocks, with equipment of 20 broad and 20 narrow looms, using electric power. W. H. Newell is president of the company; J. Slickley, treasurer and U. S. Colmary, superintendent. Company will have an office at 1427 Dickinson St., Philadelphia.

Enlargements and Improvements.

Alabama, Roanoke. The W. A. Handley Mfg. Co. is reported to make improvements to the plant and will expend about $5,000 for the purpose.

Connecticut, Plainfield. The Lawton Mills Corporation is to erect a $100,000 addition.

Connecticut, Wauregan. New machinery is being installed in the finishing department of the Wauregan Co. They are also putting in a new twister in the spinning room (Mill No. 1).

*Connecticut, Willimantic. Work has been started on improvements to the Windham Mfg. Co.'s plant. They will build two towers, and a one-story addition, to the upper mill. Additional floor space will be acquired by erecting the towers, containing the stairways. A bridge will be built connecting the two mills.

Georgia, Eatonton. The Middle Georgia Cotton Mills are making plans for increasing the machinery equipment.

Georgia, Jackson. The Pepperton Cotton Mills are planning extensive additions to the plant, which will about double the present capacity.

*Georgia, Sargent. A new mill is to be built for the Wahoo Manufacturing Co. (manufacturing yarns), replacing plant recently destroyed by fire. The new building will be equipped with 6,400 spindles, double the old equipment.

Georgia, Tennille. The capital stock of the Tennille Yarn Mills has been increased from $70,000 to $100,000. Additional machinery will be installed.

C. Enos Bean, secretary and manager of the plant, has tendered his resignation, to take effect Oct. 1st.

Massachusetts, Adams. The Berkshire Cotton Manufacturing Co. is planning to install a new brazing machine.

Massachusetts, Fall River. The American Linen and Merchants Mills are reported to install broad looms in the plants, replacing some 1,500 narrow looms. It is stated that practically the entire product will be sold hereafter in the gray.

Massachusetts, Fisherville. The Fisher Mfg. Co. have placed an order with the Bell Pure Air & Cooling Co., of New York, for the Bell humidifying apparatus.

Massachusetts, Franklin. Repairs and alterations are being made at the Franklin Mills Corporation. Additional narrow looms and a new boiler will be installed.

*Massachusetts, Holyoke. In addition to erecting a new mill, the Lyman Mills will also build a new boiler house, provided for installation of 16 new boilers.

Massachusetts, New Bedford. The Nonquitt Spinning Co. are equipping their mill throughout with the American Moistening Company's system of air moistening.

Massachusetts, New Bedford. The Gosnold Mills are equipping their new weaving mill with the American Moistening Co.'s system of air moistening.

Massachusetts, New Bedford. At meeting held recently by the Board of Directors of the Potomska Mills, a regular quarterly dividend of 1 1/2 per cent. was declared to make provision for the erection of a new weave shed.

Massachusetts, Rockland. The Rockland Webbing Co. has prepared plans for an addition, 100 by 50 feet, one story, to its plant. Contract will soon be awarded and work pushed to completion.

Massachusetts, Waltham. The Boston Manufacturing Company will install over 100 new Draper looms in the plant.

Mississippi, Natchez. The Natchez Cotton Mills have installed 40 automatic looms in No. 1 mill and if found satisfactory, will replace all the looms in Mills No. 1 and 2 with like equipment. Although Mill No. 2 has not been in operation for some time, it is expected to have both mills running by Sept. 1st.

*New York, Cohoes. Plans have been completed for the rebuilding of the Troy Waste Manufacturing Co.'s plant, destroyed by fire The building, which will be 155 by 117 feet, five stories, is expected to be finished by October.

New York, New York. The Moosehead Mfg. Co., Jno. C. Korth, proprietor, is to install additional machinery, increasing capacity of the plant.

New York, Utica. Work has been started on an addition to the Utica Steam & Mohawk Valley Cotton Mills plant. The building will be 100 by 56 feet, three stories, and will be used partly for storage purposes and relieve congestion in the main mill.

*North Carolina, Belmont. Work has been started on construction of new mill for the Chronicle Mills.

*North Carolina, Charlotte. The Elizabeth Mills will start work at once on erection of new buildings in which they will install 6,000 new spindles. This plant is run on carded and combed Peeler yarns, from 50s/1 to 80s/1, also 2 ply, skeins, warps, cones and tubes.

North Carolina, Draper. The German-American Company is reported to install 10,000 additional spindles in the plant.

North Carolina, Fayetteville. The Holt-Morgan Mills have recently increased the capital stock to $375,700 and are reported to install additional machinery.

*North Carolina, Henderson. The Harriet Cotton Mills will start work at once on the new addition to be known as Mill No. 2, with equipment of 12,000 ring spindles for making ply yarns.

*North Carolina, King's Mountain. The Cora Cotton Mills have not yet made any definite decision regarding additions.

*North Carolina, Lowell. Work is progressing on the No. 2 mill for the Lowell Cotton Mills. This building will be one story, 336 by 135 feet, and will have capacity of 15,000 spindles.

Pennsylvania, Clifton Heights. The Colonial Manufacturing Co., manufacturers of Turkish towels, tidies and table covers and printers of textile fabrics, report a rushing business. They operate 42 looms, dye, bleach and finishing departments and sell the production through New York. They are now arranging for an extension to their mill in the way of enlargement to their beaming department.

Pennsylvania, Philadelphia. Ground has been broken for the erection of a new two-story building of stone and brick, 46 by 180 feet at Kensington Avenue and Venango Streets for the John Mawson Hair Cloth Company.

*Rhode Island, Forestdale. Contract for erection of new building for the Forestdale Manufacturing Co. has been let to the E. K. Watson Co., of Warren, R. I. This building will be 100 by 140 feet, four stories.

*Rhode Island, Pawtucket. Work has been practically completed on the new mill for the Providence Braid Co. and work has been started removing plant from Phillipsdale to this new mill.

South Carolina, Easley. At meeting held recently by the directors of the Easley Cotton Mills, it was voted to build a cotton waste mill in addition to present plant.

South Carolina, Greenville. The addition to be built for the Carolina Mills, in which 6,000 new spindles and 180 looms will be installed, is expected to be in operation by January, '08. This plant is run on wide print cloths.

South Carolina, Union. The Union Buffalo Cotton Mills are to expend about $100,000 in general repairs.

*South Carolina, Ware Shoals. The Ware Shoals Mfg. Co., which has been reported building an addition in which additional machinery will be installed, is completing the original lay out of the plant. They will install 20,000 new spindles and 600 looms, giving a total of 1,400 looms and 50,000 ring spindles. This mill is run on prints, drills and sheetings.

*Tennessee, Fayetteville. The engineering work for the new addition (4,000 spindles) to the Elk Cotton Mills, is being done by Stuart W. Cramer of Charlotte, N. C. The machinery order has not yet been placed.

*Texas, Sherman. The Sherman Cotton Mills have recently completed installation of a large amount of additional machinery in the plant.

Tennessee, Knoxville. Work has been started on an addition to the Knoxville Cotton Mills. Additional spindles will be installed. A new power plant is also being put in.

Mills Starting Up.

*Rhode Island, Alton. Operations have been started in the Alton Lace Mfg. Co.'s new plant.

Mills Shutting Down.

Massachusetts, Medway. The mills of the Medway Manufacturing Co. have been closed.

WOOLEN.

New Mills.

*Connecticut, Rockville. The Minterburn Mills Co., capitalized at $300,000, has started operations in the new plant, making worsteds and woolens. This mill is now equipped with 4 sets and 41 looms, dye house and operated by steam and water power. Thos. W. Sykes is president of the company; M. C. Mason, treasurer, and P. S. Plouff, superintendent. Product is sold through the Hockanum Asso.

*Georgia, Rossville. The Peerless Woolen Mills will have their new plant in operation in July. This plant will be operated by electricity.

Illinois, Chicago. The Kassman Manufacturing Co., which has been incorporated recently with capital stock of $50,000, will have the plant in operation this fall, making worsted cloths exclusively. Plant will be equipped with 16 looms, dye house and run by steam. Product will be sold direct. Bruno Kassman is president of the plant and Clarence E. Shurtleff, treasurer.

*Massachusetts, Huntington. The Huntington Mfg. Co. has recently been incorporated to succeed the Massasoit Woolen Mills. Wm. Walker of North Hartland, Vt., is president, G. W. Reed of Taunton, treasurer, and Messrs. Fred H. Gooch and W. M. Lovering of Taunton are also interested. Ernest Lord is the superintendent of the new company, which will make worsteds and cotton worsteds.

*Massachusetts, Palmer. Ford & Hawkes are now operating a plant at this place, making fine wool and merino shoddies. Also make a specialty of custom work.

Pennsylvania, Philadelphia. An application has been made for a charter for the West End Woolen Mills Co., with the following incorporators: Frank B. Birch, of the firm of Frank B. Birch & Son, manufacturers of woolen yarns; Joseph D. and Edward V. Murphy, of the well known firm of Murphy & Bro., manufacturers of cotton, woolen and worsted goods, with mills at 11th and Fitzwater Sts. and Chester, Penna. This company will take over the mills now operated by H. S. Henry located at 64th and South Sts.

Pennsylvania, Philadelphia. Messrs. Jenny & Stott are operating 14 narrow looms on men's wear, commission, in Shaw's mill at 1121 E. Chelten Avenue, Germantown.

*Washington, Walla Walla. The proposed woolen mill at this place is to be a consolidation of two woolen mills now in operation in Oregon. J. Sheuerman of Pendleton, Ore., is actively interested in the enterprise. A company will be formed with capital stock of $100,000 for making woolen blankets, Indian robes, couch covers, steamer rugs, etc.

Enlargements and Improvements.

Connecticut, Dayville. The Assawaga Co. has installed six new mules in the spinning department, replacing old machinery.

Connecticut, Stafford. The Central Woolen Company is to install a new 150 h. p. engine in the mill.

*Connecticut, Stafford Springs. Operations have begun in the Rhode Island Worsted Co.'s mill at this place, some 78 looms now being run. Work of transferring machinery from the Indian Orchard mill will soon start.

Connecticut, Talcottville. Talcott Bros. have started work on an addition to the finishing department.

Connecticut, Yantic. The Yantic Woolen Co. is making plans for erection of a new engine house, two stories high.

*Maine, North Monmouth. John H. McIlroy Son & Co., whom we reported as remodeling the old King factory, will install 14 new looms, making bed blankets. R. Crawford McIlroy is the general manager. They are in the market for some good second-hand box cam looms, 93 inches to 112 inches wide.

*Massachusetts, Clinton. The Victor Manufacturing Co., recently reorganized, is replacing some of the old machinery with new, including new finishing machinery.

Massachusetts, Clinton. The Litchfield Worsted Co. is installing 12 new looms and dyeing plant in the mill. It is proposed to install a new piece kettle and an engine to run the dyeing room.

Massachusetts, Holliston. The Darling Woolen Mills Co. is making improvements to the plant at this place.

*Massachusetts, Holyoke. We have been advised by the Beebe-Webber Co. that they are simply transferring some machinery from No. 3 Mill to plant No. 2 and are not contemplating purchasing new machinery of any kind. This refers to recent report made regarding the Holyoke Worsted Co.

*Massachusetts, North Adams. Work is progressing on the new addition for the Waterhouse & Howard weave shed.

Massachusetts, North Adams. Waterhouse & Howard, manufacturers of fine fancy worsteds, are planning to install worsted spinning machinery in the plant, but have not yet determined on equipment.

*Massachusetts, North Andover. The new dye house for the Brightwood Mfg. Co. will be pushed to completion as rapidly as possible, and when finished will be equipped for yarn and piece dyeing.

New Jersey, Camden. Eavenson & Levering, 217 Atlantic Ave., report being very busy scouring, burring, carbonizing and combing wool on commission. They are adding new machinery in both their carbonizing and combing departments. J. W. Levering is the superintendent and buyer.

New Jersey, Garfield. The Garfield Worsted Mills have started work on an addition to the finishing plant.

New Jersey, Little Falls. The Beattie Mfg. Co., making carpets, is building an addition to the mill at this place.

New Jersey, Passaic. The Botany Worsted Co. is erecting a large addition to their plant, to be used for weave room.

New York, Amsterdam. Extensive additions are planned by McCleary, Wallin & Crouse, to their Axminster and Smyrna rug and carpet plant. A new three-story addition, 150 by 80 feet, will be erected for manufacturing and storage purposes and an addition made to the finishing plant.

*Oregon, Portland. The Ross Wool Scouring Co. has recently been equipped with 3 sets of cards, 10 looms and 7 knitting machines. Steam and water power are employed, and there is a dyehouse.

Pennsylvania, Clifton Heights. The Runnymede Worsted Mills, of which John C. Baldwin is the superintendent, are very busy. The new mill in which they manufacture merino yarns is partly in operation and the balance of the machinery is on hand and ready to put into position. They are now manufacturing worsted (French System) and merino yarns, operating 10 cards, 14 combs and 24,800 spindles. The production is sold direct and through Ernest R. Townson, 227 Chestnut St., Philadelphia.

Pennsylvania, Philadelphia. A charter has been asked for Thomas Wolstenholme Sons & Co., Incorporated, the incorporators being Thomas Wolstenholme, Alfred Wolstenholme, Robert Wolstenholme, Fred. Wolstenholme, Charles H. Hickman, Walter DuBree and Frederick A. Brown. The plant operated by the company is located at Frankford Ave. and Westmoreland St. and is run on worsted and merino yarns with 30,000 worsted spindles, 30 worsted cards and 30 combs. The same company is asking for estimates on a one-story and basement brick storage building which they are about to have erected.

Pennsylvania, Philadelphia. The Shetland Worsted Mills will put in 12 new looms.

Rhode Island, Greystone. New machinery is being installed in Joseph Benn & Sons' woolen mill.

Rhode Island, Providence. The Colwell Worsted Mills have started work on erection of a new mill to be built in the Olneyville section. The main building will be 150 by 70 feet, with weave shed, 150 by 60 feet, one story. A separate building 40 by 40 feet will be built for engine and boiler house and a finishing and dye house, 60 by 60 feet. Plant will be run by electricity. It is expected that the plant, which will be started with 75 looms, will be ready for operation by September 1.

*Rhode Island, Woonsocket. Work is well under way on the new mill for the Montrose Woolen Company. The main building will be 236 by 55 feet, three stories; office building, 24 by 34 feet, one story, engine room, 32 by 60 feet and central tower, 35 by 24 feet.

Mills Starting Up.

*Connecticut, Stafford Springs. Operations have been resumed in the carding and spinning rooms of Faulkner's Mill and it is expected that the entire plant will soon be running in full.

Massachusetts, Franklin. The Franklin Rug Company, recently organized, will soon start operations in their plant, making rugs from worn carpets.

Massachusetts, Hudson. The Hudson Blanket Mill is to be closed this week. Negotiations are under way for removing the business to Hinsdale.

*Massachusetts, Millville. Operations have been started with four looms on commission work in the Ironstone Woolen Mill, now run by Fred P. Cook.

Pennsylvania, Philadelphia. Riley & Schwartzer, who have been operating 12 looms on men's wear worsteds at Mascher and York Sts., have closed out their business and sold their equipment to other parties who have removed the looms to Paterson, N. J.

*Rhode Island, Wickford. The entire plant of the Premier Worsted Company is in operation. This plant is run on heavy-weight goods with equipment of 40 looms.

*Vermont, Ludlow. Operations have been resumed in the Ludlow Woolen Mills and the Jewell Brook Mills.

Mills Shutting Down.

Connecticut, Stafford Springs. Faulkner's Woolen Mill has been closed for an indefinite period.

SILK.

New Mills.

New York, Fonda. A new mill, 100 by 50 feet, three stories, is reported to be built here by A. H. Fischer (Johnstown Mocha Mills) and Geo. Lichtenstern (care Wertheimer Glove Co.) for manufacturing silk gloves and silk fabrics. Ten machines are reported to be installed at start.

*New York, Sidney. Julius Kayser of the firm of Julius Kayser & Co., was recently reported as being in this town for the purpose of making final arrangements for the starting of a branch mill here. A site for the new mill has not yet been selected, but this matter has been left in change of Ren & Thumbs, the company representatives in this section. The new building will be built of concrete blocks and the operation will be started at once.

Enlargements and Improvements.

Connecticut, Middletown. The Merchants' Silk Co. has been absorbed by the York Silk Mfg. Co., of York, Pa. The plant will be run as the Middletown branch. They will install 42 wide looms in the mill here, adding 42 more later, also winding and quilling machines.

Massachusetts, New Bedford. The Crescent Manufacturing Co., making plain and fancy silk goods, is installing machinery which will double the present output.

New Jersey, Paterson. Demorest Bros. are removing their machinery to the Murray Mill, where the plant will be enlarged with additional equipment.

New Jersey, Paterson. The Colonial Silk Co. has purchased the Abrash Bros.' silk mill and will operate same as an annex. Later they propose combining the two mills in one building.

New Jersey, Paterson. Post & Sheldon are reported as contemplating enlargement of their plant at this place.

New Jersey, Paterson. The silk throwing plant operated by L. A. Rey has been purchased by Hengeveld & Bohl.

New Jersey, Paterson. The Goldie Ribbon Co., recently incorporated, has leased another floor and will add more looms.

*New Jersey, Pompton Lake. The addition being built by the German Artistic Weaving Co. will have room for 100 new looms; 50 are to be installed at once, and there will be room for 50 more to provide for growth. A. C. Kluge is the buyer.

Pennsylvania, Altoona. Messrs. Schwarzenbach, Huber & Co. have placed a large repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Pennsylvania, Kingston. Crane Bros., Inc., has been organized recently to operate the mills of Crane Bros. at Tobyhanna. A new mill, 200 by 50 feet, is to be erected at this place.

Pennsylvania, Philadelphia. The Fretz Manufacturing Co., who are operating 70 broad and 30 narrow looms on umbrella and dress silks, under the superintendency of Robert J. Freitag, are to increase the number of their looms by adding 20 more to their dress silk department.

*Rhode Island, Central Falls. Work has been started on erection of a new dye house for the Waypoyset Mfg. Co.

MISCELLANEOUS.

New Jersey, Phillipsburg. The James Holt Piece Dye Works have been organized with capital stock of $100,000. James Holt and Harry Fisher are mentioned as interested.

New Jersey, Union Hill. The Swiss Bleachery Co. has recently been started at this place. Plant is located at 508-516 Humboldt St. and is run on bleaching and finishing; specialties—embroideries and jacquard goods.

Pennsylvania, Philadelphia. A charter has been asked for the P. J. Robinson Co., dealers in and manufacturers of cotton and woolen waste, now at 2007 and 2036 East Arizona Street. The incorporators are P. J. Robinson, Louis Martin and Charles G. Muller.

Pennsylvania, Philadelphia. Messrs. Schimmel & Leithold are equipping the buildings at 2821 Jasper St. with machinery for the dyeing of sulphur colors and printing of hosiery. The printing department, in which they print window shades and hosiery, is now in operation and very busy. The dye house will be ready for operation within a short time.

Pennsylvania, Philadelphia. The A. F. Bornat Bros. Company has been incorporated with capital stock of $300,000 and will operate a dyeing establishment. Andre F. Bornat, Jules Dehon and James G. Carville are interested.

Rhode Island. Central Falls. The Richardson Foster Co., which is soon to be incorporated and started here, will dye skein yarns and cops with a capacity of 25,000 lbs. of yarn and 12,000 lbs. of tops per week. The officers of the company are Robert Foster, president, who is connected with the Westmoreland Dye and Finishing Works, of Philadelphia; F. A. Bell, formerly with the E. H. Godshalk Co., of Philadelphia, treasurer and superintendent, the other members of the company being also from Philadelphia. The company has recently placed large orders for machinery and also contracted with the Philadelphia Water Purification Co. (12th and Columbia Ave., Phila.), for the installation of one of their latest improved filtration plants in the works. They expect to be in operation by August 15th next.

Pennsylvania, Philadelphia. D. F. Waters, proprietor of the Germantown Dye Works, 53 and 55 Wister St., is building a one-story brick dye house as an addition to his present plant, which is one of the largest in this vicinity.

Rhode Island, Providence. An addition is being built to the Glenlyon Dye Works at Phillipsdale.

FAILURES AND SUSPENSIONS.

*Rhode Island, Pawtucket. A petition in bankruptcy has been filed against the English Finishing Company of this place.

FIRES.

California, Oakland. The jute mill of the California Cotton Mills has been completely destroyed by fire. The loss, estimated at $15,000, is covered by insurance.

Connecticut, Norwich. Fire which started in the picker room at the Reliance Worsted Mill, caused damage to the plant of several hundred dollars.

Connecticut, Plainville. Fire which started in the carding room of the Bristol Manufacturing Co.'s plant has caused loss of about $1,500, covered by insurance.

Maine, Dexter. The Wassookeag Woolen Mill has been damaged by fire, which started in the picker house. Loss is mostly by water on machinery.

Massachusetts, Springfield. The cotton waste and yarn mill operated by Fred A. Richards has been badly damaged by fire.

Mexico, Pueblo. The Beneficiencia Cotton Factory has been reported destroyed by fire. The loss is estimated at $300,000.

Michigan, Lansing. The stock of the Michigan Knitting Co.'s plant has been destroyed by fire, necessitating closing of the plant for a few days. The damage is covered by insurance.

North Carolina, Charlotte. The coarse yarn mill started here by Geo. A. Howell, has been burned. The loss, estimated at $25,000, is covered by insurance.

Pennsylvania, West Conshohocken. The Merion Worsted Mills, which were almost burned out several months ago, have again been damaged by fire. The loss is placed at $10,000.

South Carolina, Columbia. The hosiery mill owned by John M. Graham, corner Wayne and Taylor Sts., has been destroyed by fire. The loss is reported covered by insurance. At this time it is not known if the plant will be rebuilt.

South Carolina, Newberry. The warehouse of the Newberry Cotton Mill was partially destroyed by fire.

FACTS AND GOSSIP.

*Connecticut, Meriden. The New England Braid Co. has been removed from this place to 42 Canal St., New York City.

*Connecticut, Montville. Joseph Mercer, formerly treasurer of the Willimantic Cotton Mill Corpn., is president and treasurer of the Mercer Manufacturing Co., recently organized to operate the Pequot Mills. W. S. Trickett is superintendent of the plant. Some changes in buildings are contemplated, but just what alterations will be made have not been fully decided. This plant is equipped with 8,606 ring spindles and 226 looms.

*Connecticut, Montville. The Pequot Mills have been purchased by Joseph Mercer, of Willimantic, who will operate same under name of Mercer Manufacturing Co. Fancy cottons will be made. W. S. Trickett will continue as superintendent of the plant.

*Delaware, New Castle. In order that a new lease of life should be given to the old woolen mills

in this town, formerly the Fort Casimir Woolen Mills, but now known as the Cromwell Woolen Mills, operating 8 sets cards, 800 looms and a dye and finishing plant, the City Council has reduced their tax assessment by $6,000 for the ensuing year.

*Georgia, Calhoun. A. H. Chastain and H. A. Dover are soliciting subscriptions toward the capital stock for a cotton mill proposed at this place.

*Georgia, Dallas. The Paulding County Electric Co. has been incorporated with capital stock of $250,000 for purpose of building and establishing an electric power plant. W. J. Nalley (Atlanta) is engineer in charge.

Georgia, Greenville. A new cotton mill is reported to be erected at this place.

Georgia, Woodbury. It is reported that an effort is being made to establish a cotton mill at this place.

Georgia, Woodstock. H. J. Johnson is reported as interested in establishing a plant for manufacturing twine and rope.

Kansas, Topeka. It is rumored that the Western Woolen Mills and the Topeka Woolen Mills (Oakland) may be consolidated.

Kentucky, Louisville. It is reported that the Eclipse Woolen Mills, which has been closed for some time, has been sold to party who is to equip the mill and resume operations.

Louisiana, Opelousas. A committee has been appointed by the Progressive League to make investigations regarding establishment of a cotton mill at this place. Phil. L. Asher is chairman of the committee and has the matter in charge.

Massachusetts, Dedham. The Merchants' Dye Works have now been incorporated with capital stock of $50,000; B. M. Earle is president of the company and E. D. Thayer, treasurer.

Massachusetts, Dedham. The Merchant's Mill has been incorporated with capital stock of $120,000. Edward D. Thayer is president of new company; John Legg, vice-president and Frank S. Fay, secretary.

*Massachusetts, Fall River. Abbot B. Smith of New Bedford, whose name has been connected with a new mill project in this city, advises us that the matter is merely a rumor so far, and no steps have been taken towards the building of such a mill by him or his associates.

Massachusetts, Lawrence. The Pacific Mills have placed a repeat order for the Bell humidifying machines with the Bell Pure Air & Cooling Co., of New York.

Massachusetts, Lowell. The Boott Mills have placed a large repeat order for humidifiers with the American Moistening Company, Boston, Mass.

Massachusetts, New Bedford. The Hathaway Mfg. Co. have placed a repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Massachusetts, New Bedford. The Mt. Pleasant Banding Co. has been reported incorporated recently with capital stock of $5,000 for purpose of manufacturing banding. Wm. R. West is president of the company and Robt. P. McEwen, treasurer.

*Massachusetts, Spencer. The Taylor Woolen Co. has been reorganized. Nathan M. Southwick is president of the plant and Arthur Monroe, treasurer. Mr. Simon Taylor will still have charge of the manufacturing department.

Massachusetts, Taunton. The Taunton Narrow Fabric Co. has been reported incorporated with capital stock of $30,000. J. R. Tyler (Taunton) is president and C. T. Orr (Attleboro), treasurer.

Massachusetts, Walpole. The Lewis Batting Co. is now known as the Lewis Manufacturing Co. The manufacture of cotton batting has been discontinued for some time.

Massachusetts, Worcester. The E. D. Thayer Co. has been incorporated with capital stock of $75,000. Edward D. Thayer is president and treasurer of the company.

Mexico, Ramos Arizpe. A cotton mill is reported to be built here by H. Boardman.

*Michigan, Ypsilanti. The committee is now working on reorganization of the Ypsilanti Underwear Co., recently placed in hands of receivers, viz: the Union Trust Co.

New Brunswick, Marysville. Negotiations are under way by the Canadian Cotton Mills Co., of Montreal, for purchase of the Gibson Cotton Mill at this place.

*New Hampshire, Suncook. P. S. Howe (Boston) is president of the Suncook Mills, recently incorporated with capital stock of $850,000 to control the properties of the China, Webster and Pembroke Mills. J. P. Reynolds, Jr., (Boston) is treasurer; Wm. G. Nichols (Suncook) agent and W. H. Robinson, superintendent. Will continue making print cloths and odd counts. Have a total of 38,848 mule spindles; 68,636 ring spindles and 2704 looms. Product is sold through Wellington, Sears & Co.

New Jersey, Camden. The International Mills, Inc., have been organized with capital stock of $50,000 for purpose of manufacturing textile goods. G. Holmes, F. A. Kuntz and S. Moore are mentioned as interested.

New Jersey, Camden. William Lund & Son, manufacturers of worsted yarns of all kinds, on 2,720 spindles (Bradford system), with a branch factory in Doylestown, Pa., report that business is very active, both plants being operated to their fullest capacity. They sell direct.

New Jersey, Camden. The factory of the John Lunn Co., in which they scoured and carbonized wool, which was burned out about a year ago, has never been rebuilt.

New Jersey, Gloucester. The Gloucester Braid Co., manufacturers of all kinds of silk and cotton braids and cash cords on 250 braiders, have sold out their business to parties in New York state who are now moving the machinery. The company had a capital of $20,000 and W. J. Thompson, president; H. M. Harleu, treasurer and Jacob Lundgren, secretary.

New Jersey, Jersey City. The Enterprise Embroidery Works have been reported organized with capital stock of $100,000. Frank O'Reilly and Edgar A. Montfort are interested.

New Jersey, Paterson. The Hengeveld & Bohl Corporation has been incorporated with capital stock of $25,000 to continue plant which has been running under same name.

New Jersey, Paterson Meyer Meyers has removed his silk plant from Redwoods Ave., to 93 River St.

*New Jersey, West New York. The E. H. Kluge Weaving Co. of New York has made no further arrangements regarding the erection of a new mill at this place.

New York, Albany. C. H. Shafer & Co. have leased a plant at Rensselaer, and will equip same for manufacturing shoddy. Operations are to start with about 35 employes.

New York, Amsterdam. The Kayser Silk Mill is being remodelled and renovated. When completed the output will be greatly increased.

New York, Buffalo. The Frontier Dye Works have been reported incorporated with capital stock of $20,000. T. H. Poulter, H. I. Weed and E. G. Mansfield are mentioned as interested.

New York, Fonda. It is reported that Virscher & Lichenstein of Gloversville have purchased a plot of land in this town on which they will erect a silk mill. The work of erecting the mill has already begun and it is expected that the plant will be in operation early in the coming fall.

*New York, Gouverneur. It is stated that it is optional with the receivers whether operations will be continued in the International Lace Mfg. Co.'s mill. It is likely that mortgages on plant will be foreclosed and plant sold at an early date.

New York, Ilion. It is reported that the Capron Knitting Co. (Utica) is negotiating for the purchase of the Sterling Mills.

New York, New York. Perlman & Hirshfeld have removed from 131 Prince St. to the Puck Bldg, East Houston St.

New York, New York. The Zurich Silk Finishing Co. has been incorporated with capital stock of $50,000 for purpose of finishing silks, ribbons and velvets. F. C. Simons (New York), P. Elphic and T. C. Press (Bronx) are mentioned as interested.

New York, New York. G. Reis & Bro. have purchased the Sperling Woven Label Co.'s plant, 52 Grove Street, and will continue operating same.

New York, New York. The Western Embroidery Co. has been reported incorporated with capital stock of $5,000. Among those interested are Chas. A. McRae (373 East 180th St.) and James Anderson (102 White Plains Ave.).

New York, Niagara Falls. The Niagara Falls Cotton Yarn Co. has awarded contract for erection of a new building, 600 by 145 feet, four stories. This plant is reported to have an equipment of 50,000 spindles.

New York, Northville. The Van Brocklin & Son Glove Company has recently been incorporated with a capital of $75,000, the directors being as follows: Eli Van Brocklin, M. E. Van Brocklin and C. G. Van Brocklin. The plant, which is now run under the name of Eli Van Brocklin & Son, is manufacturing Jersey mitts and gloves, operating 16 knitting and 30 sewing machines. Product is sold through New York houses.

New York, Sidney. It is reported that the Board of Trade in this town has secured a new industry to be known as the Keyser Silk Manufacturing Co., which will employ 500 operatives. The business men of the town are contributing to a fund to pay for a site which it is expected to be secured for $3,000.

*North Carolina, Bessemer City. At meeting held recently by committee in charge of affairs at the Whetstone and Vermont Mills, it was voted to sell the properties at public auction, and the sale has been set for Aug. 28th.

North Carolina, Lenoir. J. C. Moore of this place and E. P. Moore (Globe, N. C.) are reported interested in establishing a cotton mill here. A plant of about 5,000 spindles for making cotton yarns is proposed.

North Carolina, Lincolnton. The Eureka Manufacturing Co. has been incorporated with capital stock of $40,000 for purpose of building and operating a cotton mill. Among those mentioned as interested are J. L. Lineberger, J. C. Rankin (Lincolnton) and S. M. Robinson (Lowell).

North Carolina, Manchester. W. G. Robertson, who recently purchased the cotton mills here, will remove the looms (60) now in the plant and install additional spindles.

North Carolina, Mt. Airy. M. K. Steele & Sons, operating mill at this place, are reported as viewing site at Stony Point (Alexander Co.), S. C., where they propose erecting another new mill.

*North Carolina, Washington. It is reported that John H. Small and Hallett S. Ward are interested in project for organizing a company to build a cotton mill here.

North Carolina, Wilmington. E. N. Tart (care Fulton House, Wilmington) is reported as interested in establishment of a hosiery mill at Carolina Beach, near this place. Subscriptions to the capital stock are being solicited.

North Carolina, Washington. A project is reported under way for erecting a new cotton mill at this place.

North Carolina, Wilson. A prominent business man of this place is reported as interested in establishing a cotton mill here. Work has begun soliciting subscriptions toward the proposed capital.

*Ohio, Hamilton. The Mentor Knitting Mills have relinquished option on the Pioneer plant and they have abandoned idea of operating there.

Ohio, Lancaster. The Maddock Textile Company has been reported incorporated with capital stock of $25,000. Among those mentioned as interested are C. R. Maddock and William Wyman.

Personals.

C. T. Booth has accepted a position as overseer of carding for the Madison Woolen Company, Madison, Me. He was formerly employed at Rochdale, Mass.

Charles A. Fildes has accepted a position as superintendent of the Manchester Woolen Company, Manchester, Mont., a new mill which is to start early in June in the manufacturing of blankets and cassimeres.

Joseph Locke has accepted a position as second hand in the card room at the Merchants Mill, East Dedham, Mass.

J. L. Jackson, formerly employed at the Patten Manufacturing Company, Sherbrooke, Quebec, Canada, has been engaged as superintendent of the Allenton Woolen Company, Allenton, R. I.

H. O. Davidson has accepted the position of superintendent of the Woodstock Mills at Anniston, Ala. He was formerly designer at the Hope Mills Manufacturing Company, Hope, N. C.

W. E. McKinney has accepted a position at the Premier Mills, Barton, Ark. He was formerly employed at the Highland City Mills, Talladaga, Ala. C. H. West succeeds him at Talladaga.

George W. Eadie has accepted a position as superintendent of the Passaic Woolen Company, Passaic, N. J., succeeding S. G. Hall, who has resigned.

W. W. Shaw has accepted the position as superintendent of the Grendel Mills, Greenwood, S. C., succeeding W. Y. Harrison. He was formerly employed at Ninety-Six, S. C.

J. L. Gambrell has accepted the position as superintendent of the Bibb Mill No. 2, Macon, Ga. He was formerly overseer of spinning at the Fulton Bag & Cotton Mills, Atlanta, Ga.

W. J. Hamilton has accepted a position as night overseer of carding at the Mount Airy Cotton Mills, Mount Airy, N. C. He was formerly employed at Columbia, S. C.

B. G. Rhyne has accepted a position as carder and spinner for the Ivey Mills, Hickory, N. C. He was formerly night superintendent at the Arlington Mills, Gastonia, N. C.

Frank W. Austin, boss dyer at the woolen mills at Huntington, Mass., for a number of years has severed his connection with that company and returned to his former home in Rockville, Conn.

Thomas Miller has accepted the position as overseer of the wool sorting department for the Geo. H. Gilbert Mfg. Company at Gilbertville, Mass.

Wm. Collins, formerly employed at the Silver Spring Bleachery, Providence, R. I., has accepted the position as assistant superintendent for the United States Finishing Company at the Norwich (Conn.) Mill.

Geo. Cunliffe has accepted the position as overseer of weaving for the Dwight Mfg. Company, Chicopee, Mass. He was formerly employed at West Warren, Mass.

Chas. Goehring, overseer of weaving at the Airdale Mills, Pittsfield, Mass., has severed his connection with that company. The help in the weaving room presented him with a purse of money.

Edward Friar, second hand in the weaving room at the Quidnick Mills, Quidnick, R. I., has severed his connection with that company and has accepted a position in charge of weaving at the Centreville Mills, Centreville, R. I.

Henry Lewis, after fifty-eight years of continuous service with the Amoskeag Mfg. Company, Manchester, N. H., has severed his connection with that corporation on account of ill health.

Wm. Tallent has accepted the position as overseer of weaving for the Thorndike Company of West Warren, Mass. He was formerly employed at Fall River, Mass. He succeeded Geo. Cunliffe.

Wm. Taylor, who has held the position as overseer of the moquet department of the Carpet Works at Thompsonville, Conn., for the past three years, has severed his connection with that company. He has been succeeded by John Davidson.

Chas. B. Chase, superintendent of the Samoset Company, Valley Falls, R. I., for the past two years, has concluded his duties with that company and will become superintendent of the new Lincoln Mill at Fall River, Mass.

William M. Barber has accepted a position as overseer of weaving for the Aldrich Manufacturing Company, Moosup, Conn. He was formerly employed at Centreville, R. I.

Frank H. Paige has been promoted to the position as superintendent of the Prospect Mills of the American Woolen Company at Lawrence, Mass. He is the son of Edward D. Paige, who is at the head of the wool dyeing department of the American Woolen Company at Boston.

Benjamin Foster, formerly overseer of weaving at the Stevens Mill at Fall River, Mass., and who recently accepted a position at Middletown, Conn., has returned to Fall River, Mass.

C. B. Seale, instructor of the textile department of the Columbus Industrial School, Columbus, Ga., has resigned his position at that institution and accepted the position of superintendent of the Hawkinsville Cotton Mills. Mr. Seale came to Columbus from Pennsylvania, where he has had wide experience in the textile training schools, and he goes to Hawkinsville to take up his new duties well equipped for the position to which he has been called. O. B. Rogers succeeds Mr. Searle at the industrial school as textile instructor.

Alec Jennings, overseer of carding at the Grinnell Mills, New Bedford, Mass., has resigned on account of ill health.

Abbott P. Smith, one of the promoters and directors of the Kilburn Mill, New Bedford, Mass., has resigned his position as director.

Crawford P. Partlow, for the past four years second hand in the carding and spinning department of the J. D. Clark Company, Rochdale, Mass., has been promoted to the position as overseer. Mr. Partlow is a bright young man and with the good training he has had, will make a valuable overseer.

George T. Smith was elected vice president; George E. Long, treasurer; and Harry Dailey, director and secretary of the Joseph Dixon Crucible Company at a meeting held May 31st. Action was also taken on the death of vice president and treasurer, John A. Walker.

Joseph Saymour has accepted a position as overseer of dressing at the Riverside Mills, Providence, R. I. He was formerly employed at the Coronet Worsted Company, Mapleville, R. I.

Louis E. Hary, a brother of Jacob Hary, superintendent and general manager of the Montrose Woolen Company, Woonsocket, R. I., arrived in this country with his father, who is 83 years of age. Louis is to interest himself with his brother Jacob in the Montrose Mill. The elder Mr. Hary will spend the summer with his two sons and will return to Europe in the fall.

T. F. Hoy, superintendent of the Capital City Cotton Mills, Columbia, S. C., has resigned and accepted a position at Camden, S. C. S. M. Mims, superintendent of the Richland Mills, will succeed him.

E. A. French has accepted the position as superintendent of the Natchez Cotton Mills, Natchez, Miss.

Charles Heritage has accepted a position as superintendent of the Dexter Richards & Sons Company, Sugar River Mills, Newport, N. H. Mr. Heritage has had a wide experience in the leading mills as a successful superintendent, and will make a valuable man for this company.

Charles Walcott has been elected treasurer of the Newmarket Manufacturing Company, Newmarket, N. H. He was formerly president of the China and Pembroke Mills, Suncook, N. H.

William R. Bellew, superintendent of the Star Woolen Company Mills, Cohoes, N. Y., has resigned.

J. D. Price has accepted a position as overseer of dyeing at the Ashaway Woolen Company, Ashaway, R. I. Mr. Price held this same position for a number of years some time ago.

Harrison Elmer Drew, formerly second hand in the weaving department at the Dwight Manufacturing Company, Chicopee, Mass., has been promoted to the position of overseer of weaving in the No. 1 and 2 weave rooms, having accepted the position made vacant by Joseph Cookson, who has accepted a position at New Bedford, Mass.

George H. Newry has accepted a position as overseer of dyeing for the Angus Park Manufacturing Company, East Glastonbury, Conn. He was formerly employed at the Cowan Woolen Company, Lewiston, Me.

A. Johnson, formerly with the Broad Brook Woolen Company, Broad Brook, Conn., has accepted a position as overseer of finishing for the Nasonville Worsted Company, Nasonville, R. I.

James F. Mahoney, second hand in the weaving department of the No. 1 mill of the Coronet Worsted Company, Mapleville, R. I., has resigned and accepted a position as bookkeeper for the Quincy Print Works at North Adams, Mass.

Walter H. Eyers, overseer of finishing at the Merrimack Woolen Company's mill at Lowell, Mass., has severed his connection with that company.

James Chisholm has severed his connection as superintendent of the Adams Woolen Company, Adams, Mass., and has accepted a position at the Pontoosuc Woolen Company, Pittsfield, Mass.

Joseph M. Dunham, 83 years of age, and who was superintendent of the Merrick Tread Company's mill at Holyoke, Mass., died at his home, 106 Chestnut Street, in that city, May 28th. He had been 32 years employed by the above company.

A. T. Woodin, for 30 years master mechanic at the Mississippi Cotton & Woolen Mills, Wesson, Miss., has resigned on account of ill health.

J. V. McCombs has accepted a position with the Scotland Mill, Laurinburg, N. C., as overseer of spinning and assistant superintendent. He was formerly employed at the Fidelity Mill, Charlotte, N. C.

W. D. McCombs has accepted a position at Hartville, S. C., as overseer of spinning, having resigned his position as overseer of spinning and assistant superintendent at the Scotland Mill, Laurinburg, N. C.

J. Frank Broom has accepted a position as overseer of twisting, warping and spooling at the Fidelity Mill, Charlotte, N. C. He was formerly employed at the Louise Mill, Charlotte, N. C.

J. A. Barlor has accepted a position as overseer of weaving, slashing and webb-drawing at the Eufaula Cotton Mills, Eufaula, Ala. He was formerly employed in a similar capacity at Eastman, Ga.

C. E. Hall has accepted the position of overseer of spinning, spooling and warping at the Richland Cotton Mill, Columbia, S. C. He was formerly employed at Hartsville.

J. W. Lindau has resigned his position as manager of the cloth finishing mills at Greensboro, N. C., after twelve years' service.

W. W. Shaw has accepted a position as superintendent of the Grendel Mill, Greenwood, S. C. He was formerly superintendent of the Ninety-Six Cotton Mill, Ninety-Six, S. C. He is succeeded at Ninety-Six by J. L. Davis, formerly of the Hermitage Mill, Camden, S. C.

William Fielden has accepted a position as overseer of weaving at the Waxahachie Cotton Mills.

Waxahachie, Texas. He was formerly employed as overseer of weaving at Lynchburg, Va.

George T. Andrews has resigned his position with the Central Mills, Griffin, Ga., where he was employed as overseer of carding and spinning, and will accept a position with the Lowell Machine Shops. He was formerly employed by this company erecting machinery. His second hand, C. A. Huckaby, succeeds him in carding, and John M. Wilborn, overseer of weaving, will also take charge of spinning.

J. E. Pressley has accepted a position as overseer of carding at the Worioto Cotton Mill, Nashville, Tenn. He was formerly employed at Wadesboro, N. C.

David Dawson died at Cartwright, Ala., after a prolonged illness. He was one of the most popular and successful cotton mill managers in the South.

J. F. Van Nest, head of the sales department of the Garner & Company concern, died June 7th, aged 43 years. He had been connected with Garner & Company for the past 27 years, and was obliged to give up business some time ago on account of his health. He was well known and popular with all the largest buyers throughout the country.

Manning, Emery, Jr., general manager of the Le Roy, N. Y., Cotton Mills, has brought the production of the mill up to an enviable position. This company has offices at Le Roy, N. Y., and at Boston, Mass. George O. Dexter, Hamilton, Ont., Canada, succeeds Mr. Emery as agent. John J. Brown, formerly of Housatonic, Mass., is superintendent of the yarn mill, and Warren Barnett is in charge of the carding and dyeing department. The mills are equipped with an efficient corps of overseers.

Charles Auell, who has been general manager of the Saugus Manufacturing Company, Saugus, Mass., has tendered his resignation.

W. W. Gammash has accepted a position as overseer of carding with the Gleason Woolen Mills, Gleasondale, Mass. He was formerly employed at the Dexter, Richards & Sons mill at Newport, N. H.

George Whittaker has severed his connection as overseer of finishing with the Montreal Woolen Mills, Montreal, Canada, and accepted a similar position with John Grieves Sons, Lacon, Ill.

C. O. Rose, overseer of weaving at the Thomas Kay Woolen Company, Salem, Ore., has severed his connection with that company.

David C. Stewart, Jr., has severed his connection with the Seaconnet Mills, Fall River, Mass., and accepted the treasurership of the new Chadwick Print Works. George Brooks has succeeded Mr. Stewart at the Seaconnet Mills.

Robert Borner, employed as designer and overseer of weaving for the Frostman & Hoffman Mills at Passaic, N. J., will sever his connection with that company on or about July 1st.

L. W. Powers, formerly superintendent of the Bristol Manufacturing Company, New Bedford, Mass., has gone into partnership with W. W. Brooks, of New York, formerly connected with Rose, Woodward & Company, cotton brokers. They have opened a real estate office at Waltham, Mass.

Herman Waterhouse has engaged Mr. Dolbel, who was employed for a number of years at the Riverside Mills, Providence, R. I., as cashier and bookkeeper, and also bookkeeper at the Cranston Worsted Mill, Bristol, R. I., to take charge of their office which they are to open at Providence, R. I.

John Bullard has accepted a position with the Reynolds Woolen Mills, Reynoldsville, Pa., as assistant superintendent. He will also look after the dyeing and finishing department.

Mr. Ryan with the Tremont & Suffolk Mills, Lowell, Mass., for the past six years, has resigned his position as overseer of ring spinning, spooling and warping. He has accepted a position with the New England Cotton Yarn Company, Lowell, Mass. Mr. Ryan had 75,000 spindles in his charge.

John E. Hess, superintendent of the Swift River Mills, and Miss Etta B. Gould were married at Enfield, Thursday morning by Rev. P. B. Stratton. Mr. & Mrs. Hess went on a short automobile trip.

John Whitman has accepted a position as boss spinner in the Pontoosuc Mill, Pittsfield, Mass. He was formerly employed in a similar position at the Broadley Mill.

William Baker, overseer at Centreville, R. I., has accepted a position at Aldrich Manufacturing Company, Moosup, Conn.

William A. Carpenter, overseer of ring spinning at the Royal Mill, will also take charge of the ring spinning at the Valley Queen Mills, River Point, R. I.

Cornelius Donohue, overseer of the weaving at the Royal Mill, will have charge of weaving at the Valley Queen Mills, River Point, R. I.

Thomas Smith has accepted a position as overseer of weaving for the La Porte Woolen Mills, La Porte, Ind. He was formerly employed at the C. A. Root Company mill, Uxbridge, Mass.

John McCavitt, overseer of mule spinning at the Valley Queen Mills, has accepted a position at Centreville, R. I. George Davis, overseer of mule spinning at the Royal Mill, River Point, R. I., will have charge of mule spinning at the Valley Queen Mill, in connection with his present position.

Edward Fryer, formerly second hand in the weave room at the Quidnick Mills, has accepted a position as overseer of weaving at Centreville, R. I.

F. O. Upton has accepted a position as boss carder for the Palmer Mills, Middletown, Conn.

I. L. Sjostrom, who has been connected with the Lawrence Dye Works for a number of years, has succeeded S. H. Bailey, Jr., as treasurer of the Saugus Manufacturing Company, Saugus, Mass. He will also act as manager.

James Broom has accepted the position as overseer of spinning nights at the Elizabeth Cotton Mills, Atlanta, Ga.

Charles L. Linderson has acecpted a position as master mechanic for the Warner Cotton Mills, Newburyport, Mass.

Alfred Goodwin has accepted a position as superintendent of the worsted department for James Roy, Watervliet, N. Y.

George Taylor has severed his connection as overseer of spinning with the Tilton Mills, Tilton, N. H. Leon Lock, formerly second hand at this mill, succeeds him.

Thomas Goulding has accepted a position as overseer of the dyeing department at the Litchfield Mills, Clinton, Mass.

C. W. Fisher has resigned his position as overseer of dyeing for the Manetta Mills, Lando, S. C., and accepted a similar position with the Springstein Mills, Chester, S. C.

Alec. Jennings has resigned his position as overseer of carding at the Grinnell Mill, New Bedford, Mass., on account of ill health. He is succeeded by Alcide Tremblay, formerly second hand at this mill.

James E. Allen has accepted the position as overseer of spinning at the Palmer Mills, Three Rivers, Mass.

Alfred Wigglesworth has accepted a position as overseer of weaving at the Norwalk Mills Company, Winnipauk, Conn.

Robert S. Dodds has accepted a position as overseer of weaving at the Racine Woolen Mills, Peru, Ind.

J. D. Beiers has accepted a position as overseer of spinning and winding in the cotton department of the Atlanta Woolen Mills, Atlanta, Ga. He was formerly employed at the Vardry Mill, Greenville, S. C.

John H. Anderson has accepted a position as overseer of carding for the Bibb Manufacturing Company, Macon, Ga. He was formerly with the Mobile Cotton Mills, Mobile, Ala.

James Adams has been appointed superintendent of the Arcade Mills, Rock Hill, S. C., succeeding G. B. Buchanan, who has resigned to accept a similar position with the Darlington Manufacturing Company, Darlington Court House, S. C. Mr. Adams was formerly connected with the Manchester Mills of Rock Hill.

G. S. Jones has accepted a position as overseer of carding for the Orangeburg Manufacturing Company, Orangeburg. S C. He was formerly second hand at the Capital City Mills Columbia, S. C. J. M. Boykin is his second hand, and H. R. Bolton card grinder.

W. S. Bennett has accepted the position as overseer of carding at the Altamahaw Mills, Elon College, N. C. He was formerly employed at the Ossipee Mills of this city.

A. L. Burt has accepted the position as overseer of weaving, slashing and warping at the Lafayette Cotton Mills, Lafayette, Ga. He was formerly employed at Cartersville, Ga.

Frank Hamilton has accepted the position as superintendent of the Watts Mill, Laurens, S. C. He was formerly superintendent of the Darlington Cotton Mills, Darlington, S. C.

Luther W. Ward has accepted a position as travelling erector for the Barber-Colman Company, Boston, Mass. He was formerly employed at the Barker Cotton Mills, Mobile, Ala.

S. F. Brown has accepted a position as overseer of spinning, spooling and warping in the No. 1 Mill of the Fulton Bag and Cotton Mills, Atlanta, Ga. He was formerly employed at the Abingdon Mills, Huntsville, Ala.

Edward J. Blake, Hinsdale, Mass., has accepted a position as overseer at the Hudson Blanket Mills, Hudson, Mass.

A. H. Webbendorfer, overseer of weaving at the Chace Manufacturing Company Mills at Waterville, Me., has tendered his resignation and accepted a position at Rockville, Conn.

Ambrose Hindle, overseer of dyeing at the Hamilton Print Works, after 29 years service, has severed his connection with that company.

Charles Weeks has accepted a position as overseer of carding at the Hinsdale Woolen Mills, Hinsdale, N. H. He was formerly employed at the Faulkner Mills. Stafford Springs, Conn.

J. S. Clancy has accepted a position as overseer of finishing at the Oella Mills, Oella, Md. He was formerly employed at the Angus Park Manufacturing Company, East Glastonbury, Conn.

Walter H. Eyers has accepted a position as overseer of finishing at the Cheshire Mills, Harrisville, N. H. He was formerly employed at the Merrimack Woolen Manufacturing Company, Lowell, Mass.

W. B. Hathaway has accepted a position as superintendent of the Montreal Cotton Company, Valleyfield, Que., Canada. He was formerly employed at Taunton, Mass.

Nelson H. Marsden has accepted a position as overseer of ring spinning for the Montreal Cotton Company, Valleyfield, Que., Canada. He was formerly employed at Groveville, N. J.

A. B. Peterson has accepted a position as overseer of spinning for the Gaffney Manufacturing Company, Gaffney, S. C. He was formerly employed at the Apalache Mills, Arlington, S. C.

William Amory, for a number of years treasurer of the Langdon Mills, which were consolidated with the Amoskeag Company of Manchester, N. H., died at his summer home at Dublin, N. H.

John T. Owens, overseer of carding at the No. 2 Mill of the New York Mills, has resigned.

H. F. Butler has accepted a position as overseer of finishing at the Angus Park Manufacturing Company, East Glastonbury, Conn. He was formerly employed at Wakefield Manufacturing Company, Wakefield, R. I.

Edward Callahan has accepted a position as superintendent of the No. 3 Harmony Mills Company, Cohoes, N. Y. He was formerly employed at New York Mills, N. Y.

J. S. Faulkenbury of Rock Hill, S. C., has accepted the position as overseer of dyeing for the Manetta Mills, Lando, S. C.

W. E. Myers has accepted a position as overseer of weaving with the Isaqueena Mill, Central, S. C. He was formerly employed as second hand at the Seneca Cotton Mills, Seneca, S. C.

Charles M. Harper has accepted a position as overseer of weaving with the Gibson Mill, Concord, N. C. He was formerly employed at the Highland Park Mills, No. 3, Charlotte N. C.

S. A. Scott is now secretary and superintendent of the Acworth Manufacturing Company, Acworth, Ga. He was formerly superintendent of the Paulding Company Mill at Dallas, Ga.

C. B. Gunn has accepted a position as superintendent of the Pepperton Cotton Mills, Jackson, Ga. He has been overseer of weaving at this mill for the past three years. He succeeds F. S. Allen, who has resigned.

D. A. Kelley has accepted a position as overseer of spinning at the Wampum Mills, Lincolnton, N. C. He was formerly employed at the Piedmont Mills of that place.

M. A. Riley has accepted a position as carder and spinner for the Acworth Manufacturing Company, Acworth, Ga. He was formerly employed at Dallas, Ga.

J. T. Cartee has accepted a position as overseer of spinning, spooling and twisting at Covington, Ky. He was formerly employed at the Wilson Cotton Mills, Wilson, N. C.

J. D. Boseman has accepted a position as superintendent of the Glenn-Raven Mills, Burlington, N. C. He was formerly superintendent of the Manetta Mills, Lando, S. C.

W. H. Arthur has accepted a position with one of the Chester, S. C., mills, having resigned his position as master mechanic for the Winder Cotton Mill, Winder, Ga.

W. P. Moneyham has accepted a position as superintendent at Blacksburg, S. C. He formerly had charge of carding and spinning at the Monroe Cotton Mills, Monroe, N. C.

J. H. Stevens has accepted a position as overseer of carding at Pell City, Ala. He formerly held a similar position at Milstead, Ga.

R. E. Williams, formerly overseer of spinning at the Fidelity Mill, Charlotte, N. C., is now overser of spooling, twisting and warping at that mill.

Will McClure has accepted a position as overseer of spinning at the Fidelity Mill, Charlotte, N. C. He was formerly employed at the Magnolia Mill, same city.

Alex. Davis has accepted a position as overseer of weaving at the Columbus Manufacturing Company, Columbus, Ga. He was formerly employed at Tallassee, Ala.

F. T. Radford has accepted the position as superintendent of the Meridian Mills, Meridian, Miss., having resigned his position as superintendent of the Stonewall Cotton Mills, Stonewall, Miss.

W. J. Hord has resigned his position as overseer of the cloth room of the Columbus Manufacturing Company, Columbus, Ga. Wm. Holly of the same mill succeeds him.

W. T. Castleberry has accepted the position as overseer of spinning at Liberty, S. C., succeeding John A. Morris. He was formerly employed at Spartanburg, S. C., with the Arkwright Mills of that place.

Thomas Byron has resigned his position as overseer of carding for the Atlas Linen Company, Meredith, N. H. Wm. D. Cobbett, second hand in the card room at that mill, has also resigned.

H. B. Miller has accepted a position as overseer of carding for the Fulton Bag & Cotton Mills, No. 2, Atlanta, Ga. He was formerly employed at the Warren Manufacturing Company, Warrenville, S. C. His second hand, Mr. Crolley, is also from the Warren Manufacturing Company.

J. M. Foster is now boss weaver with the Lincoln Mills, Evansville, Ind. He was formerly employed in the same capacity with the Maginnis Mill, New Orleans, La., and also with the Lanett Mills, West Point, Ga.

Christopher P. Brooks of New Bedford, Mass., has been appointed a member of the State Committee for Massachusetts of the National Society for the Promotion of Industrial Education.

Robert Bothwell, who resigned a position with the Worcester Woolen Mills Company some time ago to accept one at 31st and Reid Sts., Philadelphia, Pa., has returned to the Worcester Woolen Mills Company, and accepted the position of assistant superintendent.

C. W. Rowe has accepted the position as overseer of weaving at the Pepperton Mills, Jackson, Ga. He was formerly second hand at this mill.

Louis Zanger has accepted a position as overseer of finishing for the Hanover Woolen Manufacturing Company, Hanover, Ill.

Louis Schreier, overseer of weaving for the past 43 years at the Saxony Mill of the Hockanum Company, Rockville, Conn. has severed his connection with that company.

Mose Ayett has accepted a position as overseer of carding for the Terry Manufacturing Company, Waterville, Me. He was formerly employed as second hand of the card room at Penacook, N. H.

John T. Evers has accepted a position in charge of the wet finishing at the Somerville Manufacturing Company, Somerville, Conn. He was formerly employed at the Granite Woolen Company, West Swanzey, N. H.

Frank Handey has accepted a position as overseer of weaving for the Hawthorne Mills, Glenville, Conn.

Daniel Fox has accepted a position as overseer of weaving for the No. 1 Mill of the American Woolen Company, Winooski, Vt.

Fred Leinhos has accepted a position as boss spinner at the Minterburn Mill, Rockville, Conn. He was formerly employed with the Springville Manufacturing Company of that city.

Arthur L. Emery has accepted a position as overseer of spinning and warping in a large mill at Burlington, Vt.

John McGill, who has held the position as overseer of finishing for the Talbot Mills, North Billerica, Mass., for the past three years, has accepted a position at the Madison Woolen Mills, Madison, Me.

Robert Duxbury has accepted a position with the Cooper Wells Company, St. Joseph, Mich., as overseer of spinning.

W. E. Patten, of the firm of Patten Manufacturing Company, Sherbrook, Canada, has been appointed general manager of this company. He is a son of the late Andrew Patten, founder of the Patten Woolen Mills.

F. C. Bigelow has accepted a position as master mechanic for the Byfield Woolen Company, Byfield, Mass. He was formerly employed at the Warner Cotton Mills, Newburyport, Mass.

William Bice, employed at the No. 3 Harmony Mills, Cohoes, N. Y., has been appointed superintendent of the Harmony Strong Mill.

Daniel P. Connor has accepted a position as overseer of finishing nights for H. T. Murdock & Company, Proctorsville, Vt.

John Whitman has accepted a position as overseer of spinning at the Pontoosuc Woolen Manufacturing Company, Pittsfield, Mass. He was formerly employed at North Adams, Mass.

Frank A. Say has been promoted to the position as overseer of weaving at the Saxony Mills, to fill the vacancy made by the retirement of Louis Schreier. Mr. Say was formerly second hand at the Hockanum Mills.

William Wyman, assistant overseer of spinning at the Palmer Mills, Three Rivers, Mass., has resigned and returned to his home in Manchester, N. H.

George A. Meyers has severed his connection with the National Silk Company, Paterson, N. J., and accepted a position with Cardinal & Becker of the same city.

W. F. Ambach, overseer of finishing at the Shackamaxon Worsted Company, Philadelphia, Pa., has severed his connection with that company.

William Collier, who has held the position as wet finisher for the Merrimack Woolen Company, Dracut, Mass., has been promoted to the position in full charge of the finishing department.

J. A. Ring, who has held a position as finisher at the Suttons Mills, North Andover, Mass., has accepted a position at Philadelphia, Pa.

Isaac Mason has accepted a position as overseer of the wool sorting department for the Stafford Worsted Company, Stafford Springs, Conn.

Harry Whelan, who has held the position as overseer of weaving and designing for the Ashaway Woolen Company, Ashaway, R. I., for a number of years, has severed his connection with that company.

Thomas Keefe has resigned his position as boss dyer for the Pioneer Mills, Pittsfield, Me.

M. W. Marsh has accepted a position as overseer of spinning for Joseph Simpson & Sons Company, Toronto, Canada. He was formerly employed at Evansville, Ind.

Frank Plunkett has accepted a position as overseer of carding for the Charles M. Davis Company, Northfield, Vt. He was formerly employed at Lowell, Mass.

George A. Hovey has resigned his position at the Summit Thread Company's plant at East Hampton, Conn., where he has been engaged for the past four years.

Sidney A. Little has taken the position as second hand at the Saxony Mills, Rockville, Conn., made vacant by Mr. Say.

DEATHS.

William Andrews, 150 Sayles Avenue, Providence, R. I., died at his home in that city. He had been ill for about two years, and ten days ago received a paralytic shock. He came to America in 1849, and was engaged in the woolen business for some time. He removed to Ludlow, Vt., but later returned to Pawtucket and became an overseer in the Starkweather Mills.

James C. Blades died at his home, 72 Milton St., Lawrence, Mass., May 31st. It is claimed that he started the first Jacquard loom that was put in operation at Lowell. Also held several positions in the leading mills in Massachusetts and Rhode Island.

Robert Berryman, a well known wool dealer of Boston, Mass., died at his home on Friday, June 7th. He was born in England in 1847, and afterwards lived in Hamilton, Canada. He had been in the wool business about ten years in Boston. All the local wool houses were closed on Monday, June 10th, during the time of the funeral services.

James Harrison, who has been engaged in the manufacture of woolen goods for a number of years in Newburgh, N. Y., died in that city Thursday evening, June 13th, having been in poor health for some time. He was stricken with paralysis three months ago. He was born in England 70 years ago. His second wife and three children survive him.

John Dawson, a prominent Kensington textile manufacturer, and senior member of the firm of J. & E. Dawson, Kensington Avenue and Huntington Street, Philadelphia, Pa., died Monday, June 10th. He was born in Yorkshire, England, 63 years ago, coming to this country with his brother, Edward Dawson.

Elias A. Tuttle, head of the Fall River cloth and cotton firm of Tuttle, Hurley & Company, died at St. Luke's Hospital on Wednesday, June 19th. He was a member of the New York Cotton Exchange for 26 years. He was born at Olean, N. Y., 64 years ago. He resided at Fall River, Mass., nearly 40 years, and was highly respected.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Dockham's Textile Manufacture and Dry Goods Trade.

The 1907 edition of this well-known work has been issued in its usual attractive form and contains the features and classifications of previous years. The books contain a directory of the textile manufacturers in the United States, Canada and Mexico, cotton, wool, and yarn dealers, commission merchants, dry goods dealers, etc.; also a mortuary department giving sketches of prominent men who died during 1905 and 1906. It is published by C. A. Dockham & Company, 6 Beacon Street, Boston. Price $6.00.

Writing for the Press; fifth edition; by Robert Luce; 302 pages, 5 by 7 1/2; Clipping Bureau Press, Boston. Price $1.00.

This manual will prove very useful not only to editors and regular newspaper writers, but also to the business man as a guide in his correspondence and in preparing material intended for publication. If "Writing for the Press" were generally distributed and used among writers and business men it would exert a great influence in improving and unifying the general style of business and newspaper language.

Practical Methods of Inorganic Chemistry; by F. Mollwo Perkin, Ph. D.; 155 pages, 4 1/2 by 7; Archibald Constable & Co., London, England. Price $1.00.

This book has been prepared to supply the need of a text-book on methods of preparation in inorganic chemistry. It is divided into the following chapters: General Preparations and Methods; Salts; Halogens and Halogen Compounds; Metallic Oxides; Acids; Preparation of Metals and Metalloids; Special Preparations. The author has made all the experiments referred to in his laboratory and the methods described are those that he has found to give most satisfactory results.

Historical Memoir of the West or Brooklyn Side, Danielson, Conn.; Printed by H. V. Arnold, Larimore, N. D., for private distribution.

This historical sketch will prove interesting to the large number who by birth or adoption have been residents of Danielson, or of its vicinity. It contains many allusions to the development of the textile industry and is written in a very pleasing style.

Textile Directory of Austria-Hungary, 1906-7; 555 pages, 5 1/2 by 8 1/2; Oesterreich's Wollen und Leinen Industrie, Reichenberg, Bohemia, Austria. Price $4.00.

The present edition bring this directory to date to include all the textile mills of Austria-Hungary. The different firms are grouped under the respective towns and cities, the names of the places being set in heavy-faced type and arranged alphabetically. In the general index the names of the firms are arranged alphabetically and classified according to the different branches of the industry. The text is in German.

Artificial Silk (Die kuenstliche Seide), by Dr. Karl Suvern; 247 pages, 5 1/2 by 9; Julius Springer, Berlin, Germany. Price $3.50.

The new addition of this work will be welcomed by the textile trade owing to the extensive development in the artificial silk industry during the last six and a half years since the appearance of the first edition. The work has been enlarged to include new material. The first section on the production of artificial silk contains a description of all important processes and patented improvements in the production of artificial silk known at the present time. It is classified according to the various processes of producing artificial silk and there is also a chapter on artificial silk as a substitute for horsehair.

The second section is devoted to the properties of artificial silk, including its specific gravity, hygroscopicity, elasticity, strength, size of filaments, inflammability, effect of reagents, appearance under the microscope, and dyeing. The third section on the use of artificial silk gives an account of the various purposes for which this comparatively new product is used. In the appendix are a number of samples of artificial silk, including the filament and braided fabrics. The text is in German.

Post's Chemical-Technical Analysis (Post's Chemisch-Technische Analyse); by Prof. Dr. Bernhard Neumann; 179 pages, 5 1/2 by 9; Friedr. Vieweg & Son, Braunschweig, Germany. Price $2.00.

This is a practical handbook of technical analysis for the use of manufacturers. The present is the third edition, which has been enlarged to keep the work up to date. It is divided into the following chapters: 1. Water and Waste Water, Pyrometry and Gas for Heating and Power; 2. Gas for Lighting, Calcium Carbide, Acetylene, Mineral Oil, Paraffine, Etc.; 3. Iron, Metal and Metal Salts; 4. Inorganic Acids, Alkalies, Saltpetre, Clay.

The work is freely illustrated and the text is in German.

Business Literature.

Centrifugal and Turbine Pumps; D'Olier Engineering Co., Philadelphia, Pa.

An illustrated pamphlet describing the various types of turbine pumps manufactured by this company.

Forbes Sterilizers; Forbes Company, Philadelphia, Pa.

An illustrated pamphlet calling attention to the value of the Forbes system of sterilizing water for drinking purposes. Descriptions and prices of the different types of sterilizers are given.

Economy in Lubrication. William A. Mayes, 617 Church St., Reading, Pa., has issued a booklet comparing results in lubrication by grease and oil. He states that to those of our readers interested in the subject copy may be had for the asking.

Buffalo Blacksmith Tools: Buffalo Forge Co., Buffalo, N. Y.

An 8-page folder giving detailed information regarding the portable forges, geared hand blowers, armor plate punches and shears and ball bearing drills, manufactured by this concern. They call special attention to their No. 200 hand blower which is so constructed that it can be knocked down and packed in three minutes and set up again in the same length of time, also to their No. 660 down draft forge which is practically all of cast iron and they state will last a lifetime.

Intercommunicating and Special Systems and Construction of Country Telephone Lines; American Electric Telephone Co., Chicago, Ill.

Bulletin No. 13 and No. 22, giving detailed information, accompanied by many illustrations of hotel and private branch exchange systems, apparatus for street railways and police and fire alarm service. The development of rural telephony is described and directions for the construction of rural telephone lines are given, with much other information of value to those having anything to do with telephones.

The Engine Stop; Locke Regulator Co., Salem, Mass.

A thirty-two page booklet containing many excellent illustrations of the Locke engine stop, valves and throttles and much valuable information concerning their speed limit system. Also several illustrations of engines in different power plants that are equipped with the Locke system.

On Drying Brick and Tile; The Green Fuel Economizer Co., Matteawan, N. Y.

A pamphlet treating of artificial drying in general and then taking up the different ways in which brick and tile and other ceramic products can be dried by the use of heat from live or exhaust steam or from the kilns that are cooling off.

Whitewashing and Painting; Goulds Mfg. Co., Seneca Falls, N. Y.

A booklet calling attention to the Goulds apparatus for applying whitewash and cold water paint. The use of these appliances is rapidly displacing the old method with a brush as a great economy not only in labor, but also in material is affected.

Hand and Power Air Pumps; Goulds Mfg. Co., Seneca Falls, N. Y.

A booklet in which are illustrated and described various types of the hand and power air pumps for pressure and vacuum which are in extensive use for sprinkler systems, gas engine starters, compression tanks and for automobile tires.

Buffalo Electric Disk Wheels; Buffalo Forge Co., Buffalo, N. Y.

A folder illustrating various types of the disk wheels built by the Buffalo Forge Co., with a table of sizes and list prices.

The Palmer Mills, Three Rivers, Mass., are installing a cotton conveying system which comprises four Sturtevant special cotton exhausters, and an extensive system of galvanized iron pipe.

Lowell Textile School.

On June 6 the Lowell Textile School awarded diplomas to 14 students and certificates to 5. Following are the names of the graduates:

Cotton Manufacturing: Jas. G. Coman.

Wool Manufacturing: Henry B. Arundale, Spencer H. Haskell, Harold W. Hildreth, Earl C. Merriman, Francis E. Storer, Eugene C. Woodcock.

Designing: Stewart Mackay.

Chemistry and Dyeing: Albert W. Craig, Chester J. Farmer, George W. Hathorn, Charles W. H. Hoyt, Daniel P. Knowland, Charles A. Raymond.

The New Bedford Textile School.

At the graduation exercises of the New Bedford Textile School, held May 31, diplomas were given to 19 day and evening pupils; 123 evening pupils received certificates. Following are the names of the graduates who received diplomas:

General Cotton Manufacturing: Lloyd S. Delano, William A. Lee, Li Kung, Lo Tingyu, Andrew W. Macy, Tsang Yiu Sun, Frederick J. Vera, Wong Ka Luen.

Chemistry and Dyeing: John H. Grady, John A. MacKenzie.

Cotton Carding and Spinning: Samuel E. Jackson.

Designing: Frank Picruccini, Jr., George Worden.

Seamless Hosiery Knitting: Harold J. Walters.

Latch Needle Underwear Knitting: Ellis H. Thayer.

Cotton Carding and Spinning: Philip C. Holmes.

Designing: William Acomb, J. Adelard LaChapelle, Victor O. B. Slater.

The Philadephia Textile School.

Thirteen students were graduated from the Philadelphia Textile School at the exercises on June 6, as follows:

Regular Textile Course: Joel R. Baker, Fred S. Brewster, Joseph Gegauff, Jr., Caryl A. Grammer, Walter F. Klemer, George W. Ott, Samuel P. Ruff, Jr., George N. Sidman, Edward T. Switzer, John P. J. Wood.

Chemistry, Dyeing and Printing: Irving A. Firth, James E. Graham, John C. Tebbetts, Jr.

Sixty-four students of the day and evening classes also received certificates.

Prizes were awarded as follows:

Associate Committee of Women's prize, $10, for best executed work in jacquard design, third year, awarded to Caryl A. Grammer.

The Miss Clyde prize, $10, for best executed work in jacquard design, second year, awarded to Karl R. Paul.

Mrs. Joseph F. Sinnott prize, $10, for best executed work in jacquard design, special classes, awarded to Charles H. W. Mactague.

The Mrs. Thomas Roberts prize, $10, for general excellence in color-harmony and design, second year, awarded to George W. Fiss, Jr.

The Elizabeth C. Roberts prize, $10, for the best work in color-harmony and design, first year, awarded to Donald E. Battey.

The Textile World Record gold medal, for general excellence and thesis, chemistry, dyeing and printing course, awarded to John C. Tebbetts, Jr.

The National Association of Cotton Manufacturers' medal, for general excellence, regular course, third year, awarded to Joel R. Baker.

The Simon Friedberger prize, $10, for second in general excellence, third year, regular class, awarded to Edward T. Switzer.

Prize—Chemical balance, for best thesis in chemistry, second year, awarded to Samuel M. Jones.

Ab. Kirschbaum & Co. scholarship, for highest rating in first year, regular course, awarded to Daniel W. Strayer.

Prize scholarships for the school year 1907-1908, awarded to Matt G. Thomas, Hallett J. Foster, Maurice F. Benner (Evening Class), Harry Hodgson (Evening Class).

The Textile School at Fall River.

At the Bradford Durfee Textile School, in Fall River, the graduation exercises were held on June 3. Diplomas were given to three students, all in the cotton manufacturing course: Fred J. Coggeshall, John G. McElvie and John B. Quinn. Certificates were also given to 77 day and evening students.

Textile Graduates of the International Correspondence School.

During May and June the following students were graduated from the textile department of the International Correspondence School, of which C. P. Brooks is principal:

Complete Cotton Course: Alexander W. Osborn, Evansville, Ind.

Cotton Carding and Spinning: William L. Gifford, New Bedford, Mass.; Wm. Hardman, Hamilton, Ontario; T. J. Hobson, Lynchburg, Va.; Howard Meacham, Adams, Mass.; Joseph E. Perry, New Bedford, Mass.; Alfred J. Platt, Lewiston, Me.; T. R. Plunkett, Adams, Mass.; K. F. McCollum, New Bedford, Mass.

Textile Designing: Elwyn H. Durgin, Southbridge, Mass.; Peter J. Foley, South Easton, Pa.; Charles T. Rehm, Philadelphia, Pa.

Cotton Designing: George A. Eastwood, Holyoke, Mass.

Woolen and Worsted Designing: John T. Powers, Hinsdale, N. H.; J. H. Vose, Boston, Mass.

Woolen Carding and Spinning: Samuel Scott, Stottville, N. Y.; William L. Wall, Graniteville, Mass.

The Arlington Mills, Lawrence, Mass., are installing special ventilating apparatus furnished by the B. F. Sturtevant Company of Boston for dry cans and tenters, for crab room and dyehouse and for seasoning rooms, the entire outfit consisting of eight large steel plate fans of special construction. A heater is used in connection with the apparatus for the seasoning rooms.

Help Wanted.

A number of operatives can find employment in the Cocheco Woolen Mills at East Rochester, N. H., as card strippers, picker tenders, dye-house hands, finishing room, wool shop, etc. East Rochester is a pleasant place and living is cheap. Family help is preferred.

The Textile Exhibit at Fall River.

An interesting feature of the carnival week at Fall River was an exhibition at the Bradford Durfee Textile School. It was visited by a large number of people who showed great interest in the various exhibits, among which we note the following:

Fall River Bleachery, mercerized goods, India linons, sheetings, shirting, and percales.

Algonquin Printing Co., a fine collection of plaids, checks, fancy and staple shirtings and denims.

Stevens Mfg. Co., quilts, damask, towels and linens.

King Philip Mills, Persian lawns, dimities and organdies, plain and fancy madras, India linons, jacquard and silk muslins.

Marshall Bros., furs and men's and women's hats in every variety and shape.

Wampanoag and Pocasset Mills, cotton goods in white and grey, dimities and finished goods.

Crystal Springs Bleachery, cotton cloth and print goods.

Maplewood Mills, jewelers' cotton and absorbent cotton.

Textile Tube Co, tubes in all shapes and sizes.

Barnaby Co., Highland brilliants and shirtings, tartan and majestic plaids.

American Printing Co., plaids, checks and shirtings and mercerized finished goods.

The students of the textile school exhibited both dobby weaves and jacquard work, including plaids, towelings, etc. One exhibit showed the various processes of manufacture from the raw stock to the finished goods.

From the Mule Gate to the Stage.

Mr. Thomas McDermott, who up to Wednesday last was employed as a piecer at the Tay Spinning Company, Higginshaw, near Oldham, has accepted an engagement with a combination troupe touring the United States and Canada. He sails on Friday for Quebec to join the party, and from there will travel to New York, where he will make his debut on the stage as the World's Youngest Handcuff King and Manacle Expert.—The Cotton Factory Times.

Special Dixon Crucible Meeting.

At a special meeting of the directors of the Joseph Dixon Crucible Company, held May 31, to take action on the death of vice president and treasurer John A. Walker, Geo. T. Smith was elected vice president, Geo. E. Long, treasurer, and Harry Dailey, director and secretary.

The Foster Superheater.

The Stone & Webster Engineering Corporation have recently placed contracts for new equipment for the Pawtucket Electric Co., including four 520 h. p. B. & W. boilers equipped with Foster superheaters for 150 degrees superheat. This boiler room equipment is practically a duplicate of that recently ordered by the Texas Traction Company, of which the Fred A. Jones Company of Houston are consulting engineers, for operating the Curtis turbines in the new power station at McKinney, Texas.

The Virginia Passenger & Power Company of Richmond have also recently placed orders for Allis-Chalmers turbines and B. & W. boilers equipped with Foster superheaters for 175 degrees.

Finishing Compounds.

The Arabol Mfg. Co., 100 William Street, New York, solicit inquiries from textile manufacturers who may have any difficulty with sizing and finishing or who may desire some improvement in this respect. Scientific specialization, long and extended experience, modern facilities in factory and laboratory enable them to meet the varied conditions arising in mill work. They are continually adding to the staples that have become so popular with the textile trades.

Stephenson Bar Belt Dressing.

The wide publicity which has been given to Stephenson Bar Belt Dressing, and the success which it has attained, has led to imitation by other parties, who are asserting that theirs is the original and offering an article put up so as to resemble very closely the package of the Stephenson Bar Belt Dressing, which is made by the Stephenson Mfg. Co. of Albany, N. Y.

The manufacturer of any good thing expects imitators, and a man with business experience expects that his goods may be run down by his competitors, who offer their own as just as good or better, or costing less. Although this sort of talk is usually poor policy, it is the way in which some people play the business game, but when competition goes so far as to imitate and assert that their goods are the real thing, it becomes unfair competition.

The Stephenson Mfg. Co. propose to assert their rights in the courts, and are confident that public opinion will sustain them in their fight against this unscrupulous imitation. They ask the trade to bear in mind that they are the only makers of Stephenson Bar Belt Dressing, and to see to it that each stick bears their registered trade mark, the "man with the cog wheel face."

Six large engine-driven fans and three heaters with a complete system of galvanized steel pipe are being installed by the B. F. Sturtevant Company of Boston in the new dyehouse for the Washington Mills, Lawrence, Mass. This apparatus not only serves for heating the dyehouse, but also for keeping the rooms entirely clear from steam.

Wool Shoddies.

The East Brady Woolen Co., of East Brady, Pa., manufacture a good line of wool shoddies for the trade. They are always glad to send samples and prices on application. Correspondence is solicitated.

Cell Drier Company Will Handle the Reeves Transmission in New England.

The Reeves Pulley Company of Columbus, Ind., have made arrangements with the Cell Drier Machine Company of Boston and Taunton, by which the latter Company will have the exclusive sales agency throughout New England territory for the "Reeves" variable speed transmission. The object of the arrangement is better service to the New England trade.

The rapidly growing business of the Reeves Pulley Company among New England mills made necessary some arrangement by which the trade would be in closer touch with them than would be possible in dealing with the home office in Columbus. That their connection with the Cell Drier Machine Company will be satisfactory to them and a guarantee of stability and thorough attention to the trade there is no doubt.

The Cell Drier Machine Company needs no introduction. It is managed by Stone & Webster, with offices at the plant in Taunton and at 84 State Street, Boston. All inquiries and orders for the "Reeves" transmissions should be made direct to them and invoices will be rendered by them. Elliott F. Aldrich, who has been connected with the Reeves Pulley Company, will be actively interested in the transmission department of the Cell Drier Machine Company.

The Cohoes Dyeing Co.

The Cohoes Dyeing Company, of Cohoes, N. Y., make a specialty of dyeing and bleaching in any quantity for the knit goods trade. They are equipped to do roll and garment dyeing, giving fast colors on both wool and cotton. Raw cotton, wool, wool and cotton yarns, and piece goods of every description are also handled, with facilities for dyeing sulphur black on raw cotton stock. The Cohoes Dyeing Company will be glad to hear from parties desiring dyeing or bleaching on material in any form.

Personal.

We are informed that Isaac B. Markey has recently been elected a vice president of the Eureka Fire Hose Company, 13 Barclay Street, New York City, the largest manufacturers of fire hose in the United States.

Mr. Markey has been prominently identified with the Eureka Fire Hose Company for many years and is well equipped in every way to assume the increased responsibilities that will come to him in his new work.

Mechanical Draft.

Several mechanical draft plants of extraordinary size are described in a booklet recently published by the Green Fuel Economizer Company, of Matteawan, N. Y. A pair of fans supplied to the East St. Louis & Suburban Railway are said to be the largest ever built with overhung wheels, the wheels measuring 19 ft., 6 in., in diameter, by 7 ft. wide at the tips of the blades and being driven by Corliss engines. Photographs are shown of nearly a dozen other large plants and also drawings and lay-outs of a number of large and interesting installations, including the new Hoboken terminal of the Lackawanna R. R. A portion of the book is devoted to the Green Fuel Economizer, which is often put in with mechanical draft fans because both are beneficial under similar conditions and complementary in promoting fuel economy.

The economizer recovers heat from the flue gases and at the same time acts as a reservoir for hot water, which is available in meeting sudden demands for power. The economizer often shows its greatest economy when a low grade of fuel is burned, since under such circumstances there is usually a large surplus of air and a higher velocity of the products of combustion through the boiler passages. A greater proportion of heat is therefore carried through the boiler to be recovered by the economizer. By adding heating surface the economizer increases boiler capacity. The mechanical draft outfit makes it possible to utilize an economizer to the fullest extent; to burn the cheapest grades of fuel; to handle heavy, sudden overloads on the boilers; to get along with fewer boilers; to dispense with an expensive chimney; to obtain all the draft wanted in all conditions of weather and to secure more thorough combustion, the result of all these factors being to use less coal and thereby to save money. Anyone owning or operating boiler plants will find valuable information in this booklet.

Foster Superheaters.

The Power Specialty Company, 111 Broadway, New York, report recent sales of 120 Foster superheaters, aggregating 42,000 h. p. These superheaters are to be installed in B. & W., Stirling, Edge Moor, Heine, Franklin, Atlas and other boilers, including a number of return tubular boilers.

The orders include a large number of repeat orders following the successful operation for from one to five years of initial installations. Among many of such successive orders there have been received three from the Solvay Process Co., three from the International Harvester Co., two from James S. Kirk & Company, six from Stone & Webster Engineering Corp., four from Hartford Electric Light Co., three from Philadelphia Electric Co. three from Tennessee Copper Company, nine from U. S. Navy Department, three from Quincy Market Cold Storage Co., three from American Smelters Securities Co., seven from Electric Company of America.

Make Your Own Repairs.

Since the Philadelphia cotton convention many reports have reached us of benefits derived by those who were represented there. The manufacturer, looking for better methods in his mill operations, found something in nearly every case to fill his requirements for an improved product or a reduction in his operating expenses.

Among others the American Ferrofix Brazing Company reports the sale of a considerable number of shop licenses throughout the textile mill districts of the South, where quick and inexpensive repairs to broken machinery are particularly necessary and valuable.

It is claimed that Ferrofix repairs are not properly so called, that in fact they are really a restoration of a broken piece of machinery to its original condition except that, whereas in its original condition it broke, when "restored" by Ferrofix it will not break again where "ferrofixed."

This would indicate that a piece of machinery repaired or restored by Ferrofix is really better and stronger than it was before the break occurred.

The simplicity, quickness and cheapness of Ferrofix repairs, or "restorations," seem to make the process a valuable acquisition to the equipment of any manufacturing plant.

The officers of the American Ferrofix Brazing Company are prepared to give full information regarding Ferrofix to any and all persons who inquire therefor, either through the office of this publication or to the offices of the company, 1003 and 1005 Arcade Bldg., Philadelphia, Pa.

The Globe Dye Works Co.

The Globe Dye Works Company has been organized to take over the mercerizing, dyeing and bleaching business of the R. Greenwood & Bault Company, located at Oxford and Worth Streets, Frankford, and 140 Chestnut Street, Philadelphia. The business will be continued under the old management and at the same address as before the change. Dyeing, bleaching and mercerizing of cotton warps and skein yarns will receive the most careful attention in regard to quality and promptness of work.

Planters and Spinners Getting Together.

A workman at Messrs. Birley's spinning mill, Barrowford (Eng.), opening a bale of cotton, discovered a letter signed J. A. Safoon, of Clipper, Texas, stating where the cotton was grown, and adding: "I am a young man, and wish to correspond with some nice young lady between sixteen and twenty-three; fair skin, blue eyes, dark hair." Several replies, it is stated, have been dispatched from young women in Barrowford.—Cotton Factory Times.

The Berkeley Company, Berkeley, R. I., have placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass.

Consolidation.

Following out a plan for greater facilities with which to take care of their increasing business the Phoenix Iron Works Corporation and the Fenn Machine Co. of Hartford announce their consolidation on July 1 to form The Taylor and Fenn Company. Textile and special machinery will be manufactured as heretofore, and with the enlarged plant, improved equipment, and constant aim to increase the high standard of their products, the new company will be in a position to give the highest service to its customers.

Fliers, Spindles and Repair Work.

The Union Spindle, Flier & Machine Works, which have been owned and operated by the Hall family for many years at 1629 North 10th Street, Philadelphia, have been acquired by Geo. H. Womelsdorf & Co. The new proprietors have equipped the plant with new machinery, which has enabled them to secure the patronage of many mills that have been sending their repair work to other sections of the country. The company in addition to manufacturing and repairing spindles and fliers are now prepared to do all classes of repair work on textile machines.

Turkey Red Oil.

The large sale of the Turkey red oil, manufactured by Harding & Fancourt, 235 North Front St., Philadelphia, is due in great measure to the guarantee they give that it is absolutely pure and made from the best grade of No. 1 castor oil. They solicit communications from manufacturers who are looking for a good article of this kind.

They are also manufacturers of Tuscan softener, which is especially adapted for bleaching and finishing. In fast black dyeing it produces a very brilliant and soft product at a reduced cost, as it is not necessary to use olive oil or soap with this softener. A five-pound sample will be sent free to any one desiring to test its merits.

M. T. Stevens & Sons Co., North Andover, Mass., have placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass., this system to be installed in their Franklin Fall, N. H., mill.

Recent Textile Patents.

BRAIDING MACHINE. 856,985. Robert C. Rahm, Wyomissing, Pa., assignor to Textile Machine Works, Wyomissing, Pa.

BRAIDING MACHINE CARRIER. 856,946. Felix Duenkel, Chicago, Ill., assignor to Western Electric Co., Chicago, Ill.

CARDING MACHINE. 856,031. Samuel Cordingley, Pudsey, England.

CLOTH. Apparatus for Doubling. 855,881. John Fish, Manchester, England.

CLOTH. Treating. 855,708. Seymour Hermann, New York City.

COTTON CLEANER and Separator. 854,905. James G. Park, Alligator, Miss.

DYEING APPARATUS. 856,134. Louis Destree, Haren, Belgium.

DYEING and Bleaching Machines. Return Liquor System for. 856,922. Robert P. Smith and George E. Drum, Philadelphia, Pa.

FABRICS. Apparatus for Applying Fluids to. 856,885. Carl F. Kuebler, Dusseldorf, Germany.

FABRICS. Device for Restoring Nap to. 857,038. George B. Dexter, Brookline, Mass.

FABRICS. Machine for Cutting Ribbed. 857,540. Frank W. Robinson, Reading, Pa., assignor of one-half to Oscar B. Wetherhold, Reading, Pa.

FIBER. Machine for Decorticating Manila. 857,386. Carolus E. Dailey, Brooklyn, N. Y.

FIREPROOFING TEXTILE MATERIALS. 856,906. William H. Perkin, Jr., Manchester, England, assignor of one-half to Whipp Bros. & Tod, Manchester, Eng.

LOOM. 855,815. Eppa H. Ryon, Worcester, Mass., assignor to Crompton & Knowles Loom Works.

LOOM. Kindergarten. 856,319. Jessie C. Tyndall, St. Louis Mo.

LOOM. Kindergarten. 856,320. Jessie C. Tyndall, St. Louis, Mo.

LOOM PICKER Stick Check. 855,873. John B. Bernier, Manville, R. I., assignor of one-half to Frederick H. Roche, Manville, R. I.

LOOM SHUTTLE. 857,107. James L. Poalk, Philadelphia, Pa., assignor to Automatic Oscillating Loom Co. of America.

LOOM with Swinging Front Plate for the Shuttle Box. 855,356. Edward S. Stimpson, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM WARP Stop Motion. 855,034. Carl Adams, Easton, Pa.

LOOMS. Binder for. 856,310. Frederick B. Stone, Salem, Mass., assignor to Orin F. Bennett, Salem, Mass.

LOOMS. Drawing-Hook for Warp Threads in Weaving. 855,521. Karl Mattausch, Ketzeldorf, Austria-Hungary.

LOOMS. Multiplier Mechanism for Box. 855,102. George R. Forbes and George W. Fraker, Spray, N. C., assignors to Crompton & Knowles Loom Works.

LOOMS. Thin Place Detector Mechanism for. 855,341. Robert E. Rhoden, Graniteville, S. C.

LOOMS, Warping Machines and the Like. Lease Rod for. 857,442. Thomas A. B. Carver, Glasgow, Scotland.

LOOMS WHEN WEAVING. Humidifier for Moistening the Warp Threads of. 856,923. Thomas F. Smith, Blackburn, England.

LOOPING MACHINES. Needle Arm for. 855,847. Robert W. Gormly, Troy, N. Y.

PICKER STICK CHECK. 857,424. Napoleon Vaillancourt, Lewiston, Me.

PILE FABRIC. 855,153. John Zimmerman, Philadelphia, Pa., assignor to Philadelphia Tapestry Mills.

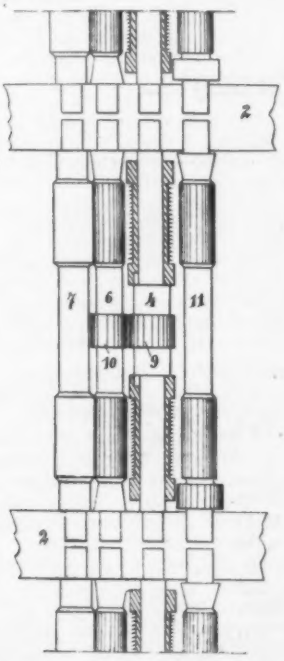
SHUTTLE. 855,791. Joseph Lacroix and John V. Cunniff, Fall River, Mass.

SHUTTLE. 855,511. Charles C. Howland, Hyde, England,

SHUTTLE. 855,514. Arthur J. Jackson, Ashton-on-Mersey, England.

SPINNING SHORT STAPLED Fibres. Drawing Apparatus for. 849,812. Joseph Perrin, Cours, France.

This invention relates to an apparatus for drawing textile fibers. Its principal object being to provide for drawing short as well as long fibers by the same apparatus and to improve the quality of the yarn produced.



In carrying out the invention use is made of a porcupine-roller, the teeth of which are arranged to engage and comb out the fibers of the sliver. Corrugated drawing-rolls so related to the porcupine-roller as to be capable of acting on the shortest as well as the longest fibers are also used.

SPINNING or Twisting Apparatus. Rotary Ring. 857,088. John T. Meats and George E. Chandler, Taunton, Mass., assignors to Mason Machine Works, Taunton, Mass.

SPINNING and Twisting Rings. Ring Holder for. 857,535. George L. Pierce, Manchester, N. H., assignor to High Speed Ring Co., Boston, Mass.

UNDERGARMENT. 854,763. Jeremiah A. Scriven, New York, N. Y.

UNDERGARMENT. 854,865. Robert M. Appleton, Boston, Mass.

Textile Trade-Marks Registered.

"Arco." Hosiery. A. B. Andrews Co., New York, N. Y.

"Arco Mills." Hosiery. A. B. Andrews Co., New York City.

"Cinderella." Knitted Underwear. Lesher-Raig Knitting Co., Reamstown, Pa.

"Cleopatra." Sewing Silk and Thread. The American Thread Co., Jersey City, N. J.

"De Luxe." Sewing Silk and Thread. American Thread Co., Jersey City, N. J.

"Electric." Sewing Silk and Thread. The American Thread Co., Jersey City, N. J.

"Estrella Finish." Cotton Linings in the Piece. Fred Butterfield & Co., New York City.

"Falmouth Stitching Made Exclusively by the Globe Thread Mills." Cotton Thread. New England Cotton Yarn Co., Boston, Mass.

"Glintaline." Bleached, Unbleached, Dyed and Printed Textile Fabrics. A. G. Hyde & Sons, New York City.

"Globe Fair Stitch Made Exclusively by The Globe Thread Mills." Cotton Thread. New England Cotton Yarn Co. Boston, Mass.

"Globe Lock Stitch Made Exclusively by the Globe Thread Mills." Cotton Thread. New England Cotton Yarn Co., Boston, Mass.

"Globe Sole Sewing Made Exclusively by The Globe Thread Mills." Cotton Thread. New England Cotton Yarn Co., Boston, Mass.

"Gulliver." Sewing Silk and Thread. American Thread Co., Jersey City, N. J.

"Hercules." Woven-Hose. Henry J. M. Howard, Washington, D. C.

"Kerr's." Sewing Silk and Thread. American Thread Co., Jersey City, N. J.

"Kool Skin." Knit Underwear. Brill Brothers, New York City.

"Lumino." Bleached, Unbleached, Dyed and Printed Textile Fabrics. A. G. Hyde & Sons, New York City.

"Medlicott-Morgan Co." Knitted Underwear. Medlicott-Morgan Co., Springfield, Mass.

"Meteora." Bleached, Unbleached, Dyed and Printed Textile Fabrics. A. G. Hyde & Sons, New York City.

"N. M. T." Sewing Silk and Thread The American Thread Co., Jersey City, N. J.

"Royal Gem." Tubular Knit Underwear. Royal Gem Mills Co., St. Johnsville, N. Y.

"$." Sewing Silk and Thread. The American Thread Co., Jersey City, N. J.

"Silkrochey." Cotton Yarn. Howard Mfg. Co., Boston, Mass.

"Three Cord Hampton Made Exclusively by the Globe Thread Mills." Cotton Thread. New England Cotton Yarn Co., Boston, Mass.

"Universal Knitting Mills." Knit Underwear. Frank Bros. & Co., New York City.

C. E. RILEY COMPANY

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BUILDERS AND IMPORTERS OF

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MACHINERY

DIRECT .. .. IMPORTERS OF **EGYPTIAN COTTON**

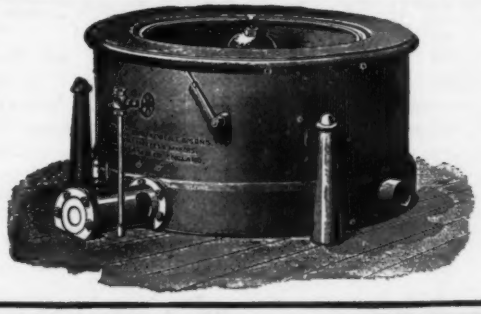
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



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Machines Kept in Stock in Boston

Friction Load

You know the friction load of a mill, the power to turn belts and shafting alone, is high, from 20-50 per cent. of your total load.

Half of this is from tight belts.

Cling-Surface permits every belt to be run easy and carry fullest loads and turns this half from overcoming friction to doing work.

Besides preserving the belts, saving oil, labor and fuel, and giving steady, even speed at machines.

It is a belt food — not a sticky dressing.

A trial order will prove it. Send for one.

Cling-Surface Co

199-205 Virginia Street Buffalo N Y

Boston: 170 Summer Street | New York: 39 Cortlandt Street | Philadelphia: The Bourse

Power, Lighting, Heating, Ventilating and Drying Complete New Plants Improvements and Extension to Old Plants
Economies in Power Developement, Transmission and Application. Economies in Steam Generation and Utilization

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HENRY B. PRATHER, President

ROCKEFELLER BUILDING, CLEVELAND, OHIO

OUR SPECIALTIES

The design of the "Steam End" of Paper, Textile and Knitting Mills and other Factories. ECONOMIES in the "Steam End" of Mills already equipped. Improvement of Old Plants. Coated Paper and Other Drying Lithograph and Printing Establishments—Ventilation and Power Transmission.

We make a study of your conditions and arrangements for Steam Generation, Transmission, and Utilization in Drying, Water Heating, Lighting, etc., also your arrangements for Power Development, Transmission and Application, and suggest improvements and changes which will save you money by increasing your efficiency of operation and reducing the cost of production. **Saving in fuel cost.**

We should like to call and look over your plant. No charge for inspection. No proposition to submit to you unless we can guarantee results.

Our fifteen years experience in stoker, boiler, power, heating, ventilating and drying engineering, is basis of our advice to clients.

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accounts Financed.
Cathrall, W. M.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.

Architects and Mill Engineers.
Ferguson, John W.
Main, Chas. T.
Suck, Adolph.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Floors.
Simpson Bros. Corporation.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S., & Son.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Automatic Warp Tying Machines.
Barber-Colman Company.

Bale Ties.
Acme Flexible Clasp Co.
DeHaven Manufacturing Co.

Balling Machine.
Torrance Mfg. Co.

Bandings.
—See under Yarns.

Baskets.
Lane, W. T., & Bro.
Morris & Co.

Belting.
Chicago Belting Co.
Gandy Belting Co.
Main Belting Co.
Shultz Belting Co.
Ulmer Leather Co.
—See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas.., Crucible Co.
Shultz Belting Co.
Stephenson Mfg. Co.
Ulmer Leather Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
—See Tapes and Braids.

Bleaching Kiers.
Allen, Wm., Sons Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

Blowers and Blower Systems.
American Blower Co.
Green Fuel Economizer Co.
Mass. Fan Co.
New York Blower Co.
Philadelphia Drying Machinery Co.
Sterling Pipe & Blower Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Leigh, Evan A.
Tebbets, E. L., & Co.
Wilson & Co.

Boiler Cleaners.
Johns-Manville Co., H. W.

Boiler Compound.
Johns-Manville Co., H. W.

Boiler Inspection and Insurance.
—See Steam Boiler Insurance.

Boilers.
—See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Shook.
Connecticut Box Company.

Box Strapping.
Acme Flexible Clasp Co.
De Haven Mfg. Co.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
—See Tapes, Braids and Edgings.

Brazing.
American Ferrofix Brazing Co.

Bridges.
Scaife, W. B.., & Sons.

Brushers.
—See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Taunton-New Bedford, Copper Co.
Textile Finishing Mchy. Co.
—See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.
Morris & Co.

Carbonizing.
Riverdale Woolen Co.

Carbonizing Machinery.
American Drying Machinery Co.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Tolhurst Machine Works.

Card Clothing.
Ashworth Bros.
Bowes, L. M., Co.
Leigh, Evan A.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Stoddard, Haserick, Richards & Co.

Carded Cotton.
Blaisdell, S., Jr., Company.
Indian Orchard Company.
Wonalancet Company.

Card Feeds
—See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, Wm. H., Co.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.

Casting Repairs.
American Ferrofix Brazing Co.

Castings.
Farrel Foundry and Machine Co.
Schofield, Wm., Co.

Casualty Insurance (All Kinds).
Maryland Casualty Co.

Cell Driers.
Cell Drier Machine Co.

Cement Pans.
Scaife, W. B., & Sons.

Chain Blocks and Hoist.
Yale & Towne Mfg. Co.

Chemicals.
Harding & Fancourt.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.

Chemical Apparatus.
Berge, J. & H.

Chemical Glassware and Porcelain.
Berge, J. & H.

Chemical Supplies.
Berge, J. & H.

Chemists.
Little, Arthur D.

Cling Surface.
Cling Surface Mfg. Co.

Clocks.
Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Smythe, J. L. N. Paper Co.

Cloth Cutting Machinery.
Cameron Machine Co.

Cloth Stretchers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
Textile Finishing Machinery Co.

Clutches.
American Tool & Machine Co.
Hunter, James, Machine Co.

Combs (Wool and Cotton).
Hood, R. H.
Leigh, Evan A.
Lowe, S. C.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Concrete Work and Construction.
Gilbreth, Frank B.
Simpson Bros. Corporation.
Suck, Adolph.

Consulting Electrical Engineer.
Puffer, William L.

Conveying Systems.
Sturtevant, B. F., Co.

Conveyors, Pneumatic.
—See Blowers & Blower Systems.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
—See Paper Tubes.

Copper Print Rollers.
Taunton-New Bedford, Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.

Copper Work for Dyers.
Butterworth, H. W., & Sons Co.
Textile Finishing Machinery Co.

Cork Inserts.
National Brake & Clutch Co.

Cornices.
Irwin, Thos. W., Mfg. Co.

Corrugated Iron and Steel.
Scaife, W. B., & Sons.

Cost and Accounting Systems.
Wright, R. A.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Stoddard, Haserick, Richards Co.

Alphabetical Advertising Index, with page numbers, follows this list.

Tolar & Hart.

Cotton Machinery.
Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mchy. Co.
American Drying Machinery Co.
Ashworth Bros.
Barker, James.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Hetherington, John, & Sons, Ltd.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
Leigh, Evan A.
Lowe, S. C.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Providence Machine Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.
Harding & Fancourt.
Nicetown Mfg. Co.
Zurn, O. F., Co.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.
Schofield, Edwin F.

Cranes.
Northern Engineering Works.
Yale & Towne Mfg. Co.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutters for Knit Goods.
Langston, Samuel M.

Cutting Machines.
Cameron Machine Co.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Kilburn, Lincoln & Co.
Stafford, G. W., Mfg. Co.

Draughtsmen.
Cameron Machine Co.

Drawing Rolls.
Hood, R. H.
Metallic Drawing Roll Co., The.

Drying Machinery.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
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Dust Collectors.
Knickerbocker Co., The.
Philadelphia Drying Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Firth & Foster Co.
Germania Dye Works.
Globe Dye Works Co.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Rowland, Samuel.
Scranton Yarn Finishing Co.

Dyeing, Drying, Bleaching and Finishing Machinery.
Allen, William, Sons Co.
American Blower Co.
American Drying Machinery Co.
American Dyeing Machine Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Mch. Wks.
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Cell Drier Machine Co.
Cohnen Dyeing Machine Co.
Curtis & Marble Machine Co.
Entwistle, T. C., Co.
Gessner, David.
Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Machine Co.
Klipstein, A., & Co.
Leigh, Evan A.
Leyland, Thos., & Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Floors.
Simpson Bros. Corporation.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electrical Engineer (Consulting.)
Puffer, William L.

Electrical Heating Devices.
Johns-Manville Co., H. W.

Electrical Supplies.
Johns-Manville Co., H. W.
Pettingell-Andrews Co.

Electric Fans.
American Blower Co.
Crocker-Wheeler Co.
General Electric Co.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Northern Engineering Works.
Yale & Towne Mfg. Co.

Electric Lamps.
Pettingell-Andrews Co.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Crocker-Wheeler Co.
General Electric Co.
Peerless Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Elevators.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Embroidery Machines for Hosiery and Knit Goods.
Walther, Otto.

Employees' Time Recorders.
Pettes & Randall Co.

Exhaust Heads.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Harrison Safety Boiler Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Goulds Mfg. Co.

Feed Water Purifiers.
Harrison Safety Boiler Works.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.

Feeds.
——See Automatic Feeds.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Fibre Spools.
Cell Drier Machine Co.
Rhode Island Fibre Spool Co.

Filters.
American Water Softener Co.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Scaife, W. B., & Sons.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.
Irwin, Thos. W., Mfg. Co.

Alphabetical Advertising Index, with page numbers, follows this list.

All types of

Sturtevant Fans

are equipped with electric motors of Sturtevant make

In the smaller sizes the specially designed motor, either open or enclosed, is attached directly to the side plate of the fan.

B. F. STURTEVANT CO., BOSTON, MASS.

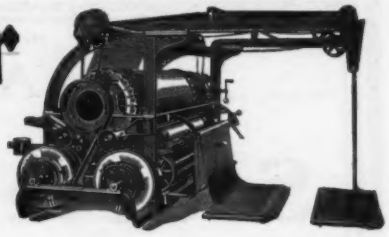
General Office and Works, Hyde Park, Mass.

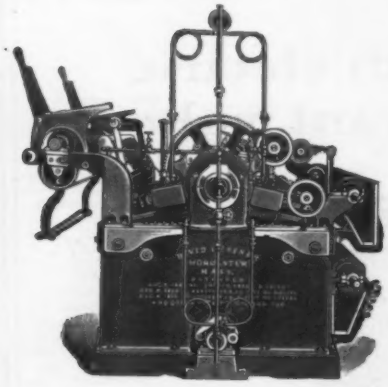
NEW YORK PHILADELPHIA CHICAGO CINCINNATI LONDON

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, etc. 561

David Gessner

Worcester, Mass.





Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty

Fire Pumps.
——See Pumps.

Flax, Tow, Hemp and Jute Machinery.
Haskell-Dawes Machine Co.
Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
Hood, R. H.
Leigh, Evan A.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Hopkins Machine Works.
Leigh, Evan A.

Forges.
Sturtevant, B. F., Co.

Forwarders.
Salvator Transfer, Inc.

Friction Clutches.
National Brake & Clutch Co.

Friction Cones.
Evans, G. Frank.

Friction Rings.
National Brake & Clutch Co.

Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
Jones, Lewis.

Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.

Glue.
Union Casein Co.

Governors (Water Wheel).
Natl. Water Wheel Governor Co.

Grease.
Cook's, Adam, Sons.

Grease Cups.
Cook's, Adam, Sons.

Grids for Lappers.
Schaellibaum, R., Co.

Heating.
——See Ventilating.

Heddles.
Steel Heddle Mfg. Co.
Stoddard, Haserick, Richards & Co.

Hoisting Apparatus.
Economy Engineering Co.
Northern Engineering Works.
Yale & Towne Mfg. Co.

Hosiery Boards.
Pearson, J. T.

Hosiery Labels.
Beck, Charles, Paper Co.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.
Buffalo Forge Co.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Hunt, Rodney, Machine Company.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Illuminating Engineer.
Puffer, William L.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.
Maryland Casualty Co.

Invoices Discounted.
Cathrall, W. M.

Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jacquards.
Halton's, Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
Craw, J. W., Laundry Machinery Co.
Eastman Machine Co.
Hunt, Rodney, Machine Company.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Robinhold Machine Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

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Note that our heddles are now made out of narrower wire.

This makes them lighter in weight and permits plenty of light in harness.

Our New Stop Motion is simplicity itself.

Will work on any number of shafts, no extra entering of drop wires because no drop wires are required. It is all in the heddles and shafts. Our heddles can be used, or German wire heddles, just as you choose.

Steel Heddle Manufacturing Co.

1842 Germantown Ave., Philadelphia.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, B., Mfg. Co.
Jones, Lewis.
Kinsey, Walter.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Ruth Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Jarrard Needle Company.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Machine Co.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Pettingell-Andrews Co.
Westinghouse Electric & Mfg. Co.

Lawyers (Mercantile).
Yeomans & Ironside.

Leather for Textile Use.
Bowes, L. M., Co.
Ulmer Leather Co.

Loom Clutches.
Natl. Brake & Clutch Co.

Loom Pickers.
Garland Mfg. Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Mason Machine Works.
Stafford, Geo. W., Co.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Beattie Machine Works.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricators.
Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.

Lumber (Box, Etc.).
Connecticut Box Co.

Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

Machine Designers.
Cameron Machine Co.

Machinery Dealers.
Jefferson Ed., & Bro.
Kinsey, Walter.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Stead, Arthur.
Taylor, James.

Machinists.
Cameron Machine Co.

Machinists' Tools.
Whitin, The D. E., Co.

Mails.
Walder, J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.

Mechanical Draft.
American Blower Co.
Goss & Bryce.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Gilbreth, Frank B.
Main, Chas. T.
Philadelphia Drying Machinery Co.
Prather Engineering Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.

Mercerizing Machinery.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

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Mill Supplies.
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benjamin, Sons.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
Philadelphia Drying Machinery Co.
Riley, C. E., Company.
Richardson Bros.
Schaellibaum, R., Co.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Ward & Vandegrift.
Walworth Manufacturing Co.
Mineral Wool.
Johns-Manville Co., H. W.
Motors.
—See Electric Motors.
Napping Machinery.
American Napping Machine Co.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Gessner, David.
Jones, Lewis.
Leigh, Evan A.
Whiteley, William, & Sons, Ltd.
Noils (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.
Oil and Waste Saving Machines.
Oil & Waste Saving Machine Co.
Oil Cups.
Walworth Manufacturing Co.
Oils.
Borne, Scrymser Co.
Cook's, Adam, Son.
Excelsior Wool Oil Compound Co.
Harding & Fancourt.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.
Zurn, O. F., Co.
Overhead Track and Trolley Systems.
Northern Engineering Works.
Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.
Packings (Asbestos Steam).
Johns-Manville Co., H. W.
Packings (Hydraulic and Pneumatic).
Detroit Leather Specialty Co.
Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.
Paper.
Merwin Paper Co.
Richardson Bros.
Smythe, J. L. N., Paper Co.
Paper Boards.
Merwin Paper Co.
Smythe, J. L. N., Paper Co.
Paper Box Machinery.
Beck, Chas., Paper Co., Ltd.
Langston, Samuel M.
Patent Solicitors.
Crosby & Gregory.
Howson & Howson.
Perforated Metals.
Hopkins Machine Works.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.
Pipe and Boiler Covering.
Johns-Manville Co., H. W.
Pipe Threading Machines.
Oster Mfg. Co.
Pipes and Fittings.
Pancoast, Henry B., & Co.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.
Plastic Cement.
Griffin Roofing Co.
Pneumatic Conveying.
—See Ventilating.
Portable Hoists.
Economy Engineering Co.
Power Plant Engineers (Steam, Electric and Water).
Prather Engineering Co.
Roberts & Abbott Co.
Power Transmission Machinery.
Almond, T. R., Mfg. Co.
American Drying Machinery Co.
American Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Company.
Evans, G. Frank.
Farrell Foundry and Machine Co.
Hunt, Rodney, Machine Company.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Latshaw Pressed Steel & Pulley Co.
Philadelphia Drying Machinery Co.
Plymouth Cordage Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Presses.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Phila. Drying Machinery Co.
Spence & Rideout.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.
Press Papers.
Merwin Paper Co.
Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Pulleys.
—See Power Transmitting Machinery.
Pumps.
Goulds Mfg. Co.
Hunt, Rodney, Machine Company.
Textile Finishing Machinery Co.
Pump Governors.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Purifying & Filtration Plants.
Norwood Engineering Co.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.
Ramie Tops and Noils.
Tierney, Frank A.
Raw Hide Gears.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.
Reed and Harness Manufacturers.
American Supply Co.
Garland Mfg. Co.
Walder, J.
Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.
Remnants.
Feingold, H. & D.
Ribbon Cutters.
Cameron Machine Co.
Ribbons.
Cheney Bros.
Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.
Roofing.
Griffin Roofing Co.
Standard Paint Co.
Roofing Material.
Johns-Manville Co., H. W.
Roller Leather.
Bowes, L. M., Co.
Rope.
American Mfg. Co.
Plymouth Cordage Co.
Rope Machinery.
Haskell-Dawes Machine Co.
Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.
Hunt, Rodney, Machine Company.
Plymouth Cordage Co.
Roving Cans.
Hill, James, Mfg. Co.
Rubber Rolls.
American Wringer Co.
Ruberoid Roofing.
Standard Paint Co.
Scallop Machines.
Merrow Machine Co.
Schools.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

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GRIFFIN ROOFING COMPANY
508 W. 26 ST., NEW YORK CITY BADGER AND AVON AVE., NEWARK
ESTIMATES FURNISHED FOR
GRAVEL, SLAG, PLASTIC CEMENT, OR ANY KIND OF COMPOSITION ROOFING
ON NEW OR OLD BUILDINGS FLAT OR STEEP ROOFS.
OUT OF TOWN WORK AT SLIGHT ADVANCE OVER CITY PRICES

RUBEROID ROOFING

Trade Mark Reg. U. S. Pat. Office.

The original elastic, weatherproof roofing. Resists acid, fire and great heat. Contains no paper or tar and will not crack, tear, rot or melt.

Invaluable for Dyehouses and Sawtooth Roofs

Ruberoid Roofing is not affected by climatic changes, but remains uniform throughout the whole year.

THE STANDARD PAINT COMPANY,

General Offices, 100 William St., New York.

Branches: Boston, Philadelphia, Chicago, St. Louis, Kansas City, Atlanta.

Secondhand Machinery.
—See Mchry. Dealers, also classified Ads.
Separators (Yarn).
Draper Co., The.
Separators (Oil and Steam).
Harrison Safety Boiler Works.
Sewing Machines and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Kinsey, Walter.
Manufacturers' Supplies Co.
Textile Finishing Machinery Co.
Union Special Machine Co.
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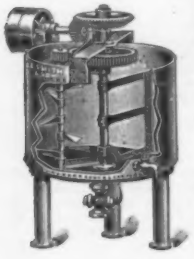

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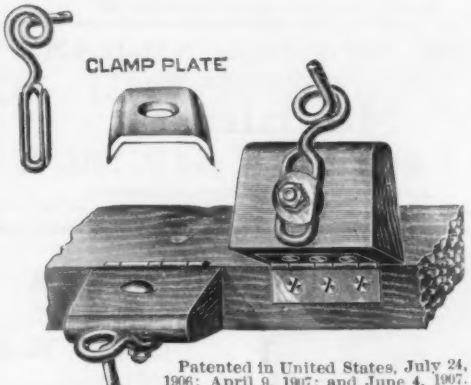

Patented in United States, July 24, 1906; April 9, 1907; and June 4, 1907. Japan, Oct. 12, 1906. France, Oct. 2, 1906. England, Sept. 13, 1906. Spain, July 23, 1906. Belgium, July 24, 1906 and Italy.
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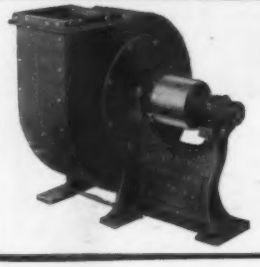

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12 Double lift double cylinder 400 hooks.
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As we have decided to discontinue, we offer for sale the following machines at sacrificing prices, all machines warranted as they are almost as good as new, having been used very little.

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1 Irmcher plain with stand, 5 needles 20 long $60.
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A second-hand punching machine for Jacquard designs
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WANTED

Second-hand loom about 60 inches wide.
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Synopsis of Expert Engineer's Report:

"Page 24,	Total Production	60,000,000 tons
" 36,	Annual Production	400,000 "
" 37,	" Mining Profit . . .	$300,000.00
	" Store Profit	60,000.00
	" Rent "	20,000.00
	Total Annual Profit (One Works)	$380,000.00
	Period of Operation	50 Years
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Wanted thoroughly competent, up-to-date General Superintendant

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for Batting Factory, three cylinder garnetts. Must be able to manufacture and sell production. State salary and give references.

MARGOLIUS COMPANY

P. O. Drawer, 488. NORFOLK, VA.

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One or two good Spinners wanted, Johnson and Bassett mules. Day work. Wages, $2.50 per day. Box "A", Derby, Conn.

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Who understand how to operate circular sleevers. Good wages guaranteed. For particulars write The Friedman-Blau-Farber Co., Cleveland, Ohio.

SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, Boston, or state their requirments directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide aquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

Cotton Mill Manager Wants Position — Would Invest

A European, experienced in erecting cotton factories and enlarging and modifying existing ones, who has been for more than twenty years superintendent in first class mills, containing spinning, weaving, dyeing and wet and dry finishing departments, and for the last six years manager of a cotton factory in Mexico, wishes to make a change. Would invest $10,000 to $15,000 in a good and sound enterprise. Address, "Mexico," care Textile World Record Boston, Mass.

Superintendent or Assistnnt Superintendent in a cotton mill or overseer of spinning, carding or weaving. Position wanted by a man 38 years of age, married, American. Also understands designing. Has worked on canton flannels, shirtings, sheetings, lawns, towels, dress goods, and all kinds of Dobby and Jacquard work. Familiar with Crompton & Knowles, Crompton & Thayer, Whitin, Mason, Bridesburg, Dobby and Jacquard looms; Asa Lees and Hetherington mules; American and English cards; ring spinning. Will not go West. South. Canada. Good references. 3989 Textile World Record.

Experienced dyer and bleacher wants situation in Philadelphia. Twenty-nine years old, has worked on all wool and cotton and wool piece goods, loose wool, worsted yarn and hosiery. Is thoroughly acquainted with aniline and alizarine dyes on all kinds of material. Address "Experienced," Textile World Record.

Assistant Manager or superintendent, office position or designer on elastic and non-elastic webbing. Position wanted by a man, 24 years of age, American, single. Is a graduate of the Lowell Textile School, three years' course. Has had 1 1/2 years' practical experience as designer on the above goods and school training on woolen, worsted and cotton fabrics. Familiar with Crompton & Knowles, Whitin and Draper looms, also Jacquards. Good reference. 3790, Textile World Record, Boston, Mass.

Agent or Superintendent of a cotton mill. Position wanted by a man, 40 years of age, American, married. Familiar with fancy, colored and plain goods of all kinds. Familiar with all kinds of cotton machinery. Has been overseer for a number of years in first class mill. Could take a position at short notice. Good reference. 3814, Textile World Record, Boston, Mass.

WOOLEN SUPERINTENDENTS.

Superintendent of a Worsted or woolen mill. Position wanted by a man 48 years of age, American, married. Has worked on all classes of woolen and worsted goods. A No. 1 reference. Could be employed at short notice. 3833, Textile World Record, Boston, Mass.

Assistant Superintendent or assistant designer in a worsted or woolen mill. Position wanted by a man 32 years of age, single, American. Has worked on fine worsted and woolens, worsted and wool overcoatings, low grade worsted and woolens, men's wear and dress goods. Familiar with American and English machinery. Good reference. 3839, Textile World Record, Boston, Mass.

Superintendent or Assistant Superintendent, or first-class boss weaving position. Position wanted by a man 40 years of age, married. Worked on all kinds of fancy worsteds and woolens. Familiar with all up-to-date machinery. Good references. 3996 Textile World Record.

Superintendent or Manager in woolen mill, or designer, assistant superintendent, or both in a good mill. Position wanted by a man 55 years of age, American. Worked on fancy cassimeres, suitings, wool and worsted, face goods, kerseys, thibets, ladies' dress goods, cotton warps, plain and fancy, overcoatings, etc. Familiar with all machinery used in woolen mill. Will not go West, South or Canada. Good references. 3991 Textile World Record.

Superintendent of Woolen Mill. American, 36 years of age, with experience as superintendent and manager 10 years. Accustomed to unions, satinets, beavers, cloakings, dress goods, etc., and the machinery used in this work. A1 references. 3410, Textile World Record, Boston.

Supt. or Asst. Supt. Position wanted by a man 45 years of age, married and American. Has worked on cassimeres, wool and cotton worsteds, kerseys, cloakings, meltons and cheviots. Is familiar with all kinds of woolen machinery. Good references. 3523. Textile World Record.

Agent, Superintendent or Designeer in a woolen mill. Could accept a position in four weeks' notice. Familiar with all kinds of woolen goods, including cheviots, cassimeres, flannels, blankets and mackinaws. 28 years of age; American; first-class references from mills where he has been employed. 3280, Textile World Record.

Assistant Superintendent and Designer. Position wanted by a man 32 years of age, married. Is experienced on men's wear, dress goods, cotton worsteds, woolens, linen towels, madras, flannels, etc. Is familiar with Knowles, Crompton, Clipper, Bridesburg dobby cam looms, dressing, spooling, twisting and warping frames. Good references. 3665, Textile World Record, Boston, Mass.

Superintendent and Designer in a woolen mill. Position wanted by a man, 33 years of age, American, married. Has worked on broad cloths, plaidbacks, fancy dress goods, union cassimeres, satinets, thibets and shirtings. Familiar with all kinds of machinery. First class recommendations. 3745, Textile World Record, Boston, Mass.

Superintendent and Designer in a woolen mill. Position wanted by a man, 30 years of age, single, Scotch. Has worked on all kinds of men's wear, wool and worsted, plain and fancy, also dress goods. Familiar with all kinds of machinery. Will go any place for a good position. First class references. 3749, Textile World Record, Boston, Mass.

Superintendent of a Small Worsted Plant, or Overseer of Drawing, Spinning and Twisting. Position wanted by a man 38 years of age, married, English. Has worked on botany or any kind of weaving yarns, also fancy novelties. Is familiar with all kinds of English and American worsted machinery. Good references. 3689, Textile World Record, Boston, Mass.

Superintendent of a small woolen mill or assistant superintendent and designer in a large mill. Position wanted by a man, 32 years of age, married, English-Canadian. Worked on men's wear, dress goods, flannels, blankets and fancy cassimeres. Familiar with all kinds of modern machinery. Good reference. 3802, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Woolen Carding. Position wanted by a man 37 years of age, married. Worked on all grades of woolen goods. Familiar with all woolen cards. Will not go West or South. One girl in the family, work in the finishing room. Good references. 3982 Textile World Record.

Overseer of Carding in a woolen mill. Position wanted by a man 42 years of age, married, American. Worked on kerseys, dress goods, cassimeres, high and low stock. Familiar with all kinds of American machinery. Good references. 4005 Textile World Record.

Overseer of Woolen Carding. Position wanted by a man 39 years of age, married. Worked on all kinds of goods. Familiar with all kinds of machinery. Two workers in the family. Will not go West, South, Canada or Pennsylvania. Good references. 3987 Textile World Record.

Overseer of Carding in woolen or hosiery mill. Position wanted by a man 35 years of age, married, American. Worked on all classes of goods and all kinds of stock. Familiar with all kinds of American and English cards, and all kinds of condensers and feeds. Will not go West, South or Canada. Good references. 3988 Textile World Record.

Overseer of Woolen Carding. Position wanted by a man, 47 years of age, American, married. Has handled all kinds of stock, cotton, wool and shoddy mixes on yarns from 1 to 6 run. Has been employed for a number of years in leading mills. First class reference. 3815, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. 32 years of age, married, wants position in the East. Accustomed to cassimeres, cheviots, dress goods, wool, cotton and shoddy mixes, all wool, from 1 to 7 run. Worked on the machinery used in this work. 3436, Textile World Record.

Overseer of Carding and spinning. Position wanted by a man, 22 years of age, single. Understands all kinds of American carding and spinning machinery. Has worked on hosiery yarns and all kinds of woolen goods. Good references. 3723, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 34 years of age and married. Has worked on outing flannels, suitings, cassimeres, overcoatings, crashes, meltons, skirtings, kerseys, doeskins, broadcloths, coverts, cheviots and thibets. Is familiar with Davis & Furber, Cleveland, English cards and garnett machines. Good references. 3513, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Position wanted by a man 47 years of age, married. Worked on woolens and knit goods, both fine and coarse, and all makes of cards. Good reference from mills where he has been employed. 3535, Textile World Record, Boston, Mass.

Overseer of carding and spinning. Position wanted by a man 41 years of age. Has worked on all kinds of woolens, cottons and shoddy mixes. Is familiar with Davis & Furber cards and mules, Cleveland, and any make of cards. Good references. 3598, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Position wanted by a man 56 years of age; married; American. Is experienced on all kinds of stock and is familiar with any make of carding machinery. Good references. 3608, Textile World Record, Boston, Mass.

Overseer of Carding in Knitting Mill. American, 36 years of age; accustomed to knit underwear, both cotton and wool; experience on Davis and Furber and Smith cards. Was 5 years second hand in one mill and for the past 6 years has been overseer. 3391, Textile World Record, Boston.

Overseer of Woolen or worsted carding. Would accept a position as superintendent of a felt mill. Understand the business in every detail. Worked on all kinds of stock and all makes of cards. First class reference. Will go any place for a good position. 45 years of age, American, married. 3470, Textile World Record, Boston.

WOOLEN SPINNERS.

Overseer of Spinning in a woolen mill. Position wanted by a man 47 years of age, married. Has worked on fancy cassimeres, dress goods, flannels, satinets, kerseys, broadcloths, blankets, etc. Familiar with D. & F., J. & B., Paul and Bancroft mules. Will not go West, South, Canada, Pennsylvania or New Jersey. Good references. 3994 Textile World Record.

Overseer of Dressing, spooling and twisting in a woolen mill. Position wanted by a man 44 years of age, married, American. Worked on fancy woolen and worsteds of all kinds, both wet and dry. Familiar with Davis & Furber and Cleveland dressing, spooling and twisting machinery. Wife is a good fancy weaver. Good references. Will not go West, South, Canada or New Jersey. 3990 Textile World Record.

Overseer of Spinning. Position wanted by a man 48 years of age, English. Has worked on all classes of woolen goods, and is familiar with Johnson & Bassett, Davis & Furber and Platt spinning machinery. Good references. 3522, Textile World Record, Boston, Mass.

Boss Spinner in woolen mill. Worked on all kinds of woolen, cotton and shoddy mixed goods. Familiar with Johnson & Bassett. Would prefer Furbush mules. First-class recommendations; age 29; American. 3287, Textile World Record.

FINISHERS

Overseer of Woolen Finishing. Position wanted by a man, 45 years of age, American, married. Worked on fancy and piece dye worsteds and woolens. Out of a position on account of mill closing. Could be employed at once. Good references. 3840, Textile World Record, Boston.

Overseer of Woolen Finishing. Position wanted by a man, 51 years of age, American, married. Has worked on all kinds of woolen goods and has had a wide experience on face finished goods. Is now employed in a large mill, but desires to make a change. Good references. 3861, Textile World Record, Boston, Mass.

Overseer of Finishing in a woolen mill. Position wanted by a man 28 years of age, American. Worked on all wool, wool and shoddy, cotton mixes, dress goods, kerseys, coverts, men's wear, etc. Familiar with all American makes of machinery. Will not go to New Jersey, Pennsylvania, West, South, or Canada. Good references. 3984 Textile World Record.

Overseer of Finishing in a woolen mill. Position wanted by a man 34 years of age, married, American. Worked on all grades of woolen and worsted, suitings, overcoatings, dress goods, etc. Familiar with Parks & Woolson, Curtis & Marble, Kenyons, Bird Bros., Gesner, Windle, Voelkers machines. Good references. 3998 Textile World Record.

Overseer of Finishing. Position wanted by a man 42 years of age, American and married. Has worked on all classes of fancy worsteds and is familiar with all kinds of finishing machinery. Good references. 3497, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 40 years of age, married and American. Has worked on all kinds of wool and worsted and cotton mix goods and cotton worsteds. Is familiar with all kinds of machinery used in wet and dry finishing. Good references. 3536, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by an American, 40 years of age and married. Worked on all kinds of woolen and worsted goods and satinets. Familiar with all kinds of finishing machinery. 3475, Textile World Record, Boston.

Overseer of Finishing. Position wanted by a man 30 years of age, married, American. Has worked on worsted serge cassimeres, flannels, overcoatings, cloakings, dress goods, meltons, kerseys, union, etc. Is familiar with all kinds of finishing machinery. Good references. 3668, Textile World Record, Boston, Mass.

COTTON CARDERS.

Overseer of Carding or Spinning in a cotton mill. Position wanted by a man 39 years of age, married, American. Worked on white and colored goods. Familiar with Whitin and Lowell machines. Will not go to Canada, New York, New Jersey or New England States. Good references. 3997 Textile World Record.

Overseer of Carding, or Second Hand in a large mill. Position wanted by a man 36 years of age, married, English, worked on all kinds of yarns—both plain and novelty, shirtings, sheetings and print. Familiar with Saco and Pettee cards and speeders, Lowell, Woonsocket frames, American and English carding machinery. 3696, Textile World Record.

Overseer of Cotton Carding. Position wanted by a man, 33 years of age, American, married. Has worked on carded and combed hosiery yarn, colored yarns and warps. Familiar with American carding and combing machinery. Good references. 3864, Textile World Record, Boston.

Overseer of Cotton Carding or Supt. of Yarn Mill. Position wanted by a man 38 years of age, married, worked on all kinds of cotton goods and all the different American carding machinery, good reference. 3699, Textile World Record.

Overseer of Cotton Carding in a large mill or carder and spinner in a small mill. Position wanted by a man, 35 years of age, American, married. Worked on white and colored work, both fine and coarse numbers. Familiar with all kinds of carding machinery. Good reference. 3784, Textile World Record, Boston, Mass.

Overseer of Carding in cotton mill. Position wanted by a man 39 years of age, single. Worked on all kinds of cotton goods, Sea Island, combed and carded, from 24s up to 150s. Familiar with American and English carding machinery. Good references. 3941, Textile World Record.

Overseer of Carding in cotton mill. Position wanted by a man 28 years of age, married. Familiar with white and colored numbers up to 16 H. K. Familiar with the following makes of machines: Platt, Mason, Whitin, Lowell, Providence, Kitson and Atherton. Good references. Will not go to Pa., N. J., Western or Southern States, or to Canada. 3951, Textile World Record.

COTTON SPINNERS.

Overseer Ring and Mule Spinning. Position wanted by a man, 45 years of age, married, English. Worked on all kinds of cotton, both fine, coarse from 1s to 200s. All kinds of cotton spinning machinery. Good references. 3850, Textile World Record, Boston.

Overseer of Mule and ring spinning. Position wanted by a man 35 years of age, married and American. Has worked on cotton yarns from 20s to 120s and is familiar with Parr, Asa Lels, Hetherington, Dobson & Barlow, and Mason new rope mules, and ring frames. Good references. 3516. Textile World Record, Boston, Mass.

Overseer of Spooling, Warping and Slashing in cotton mill. Position wanted by a man 35 years of age, married. Has worked on both white and colored cotton yarns from 8 1/2s to 120s, single and ply yarns, also silk. Familiar with Whitin, Draper, Howard & Bullough, Cohoes and Entwistle machines. One weaver in the family. Will not go West, South, Canada, Vermont or Pennsylvania. Good references. Can be employed at one week's notice. 3980 Textile World Record.

Overseer of Ring Spinning, Spooling, Warping, slashing, etc. Position wanted by a man 35 years of age, married, American. Worked on cotton yarns from 16s to 80s. Familiar with Whitin, Lowell, Mason, Biddeford, Fales & Jenckes machines. Will not go West or South. Good references. 4009 Textile World Record.

Overseer of mule and ring spinning. Position wanted by a man 40 years of age; married; English. Has worked on all kinds and numbers of cotton yarn. Is familiar with all makes of mules. Good references. 3607, Textile World Record, Boston, Mass.

DESIGNERS.

Designer in a Large Mill, or assistant in a small mill. Position wanted by a man 25 years of age, single. Has worked on fancy worsted, piece dye, mercerized goods, woolens, double cloths, serges, etc. Familiar with Crompton & Knowles, Johnson & Bassett, Birch Bros., James Hunter, Curtis & Marble machines. A graduate of a textile school and has diploma from same. Good references. 3879, Textile World Record, Boston.

Designer or Superintendent in a woolen mill. Position wanted by a man 35 years of age, single, American. Has worked on fancy and plain worsted dress goods, also jacquard work. Good references. 3904, Textile World Record, Boston.

Designer or Overseer of weaving, or boss dresser. Position wanted by a man 24 years of age, American, married. Has worked on cotton worsted. Familiar with Crompton & Knowles looms. Good references. Could take position at once. 3913, Textile World Record, Boston.

Designer. Position wanted by a man 34 years of age, married, American. Is experienced on dress and tie silks, cotton and silk goods, novelty fabrics and ribbons, woolen and worsted Jacquard work. Is familiar with Crompton & Knowles, Stafford, Schaum & Uhlinges Jacquards. First-class recommendations. 3635, Textile World Record, Boston, Mass.

Designer and Assistant Superintendent. Position wanted by a man 32 years of age, married, Scotch. Is experienced on all grades of woolens and worsteds, both men's and ladies' wear, cheviots, and homespuns a specialty. Is familiar with Crompton & Knowles looms. Good references. 3666, Textile World Record, Boston, Mass.

Designer and Assistant Superintendent. Position wanted by a man 43 years of age, married, English. Is experienced on all classes of goods from fine worsteds to the lowest woolens for men's wear. Fancy and plain cloakings and dress goods, linings, mercerized goods, unions. Is familiar with Crompton & Knowles looms and Johnson & Bassett and Davis & Furber mules. Good references. 3655, Textile World Record, Boston, Mass.

Assistant Superintendent and Assistant Designer. Position wanted by a man 27 years of age, German. Has worked on fancy cassimeres, overcoatings and dress goods. Is familiar with Crompton & Knowles looms. Good references. 3681, Textile World Record, Boston, Mass.

Assistant Superintendent or second hand in a large dye house. Position wanted by a man, 27 years of age, single, American. Worked on cheviots, cassimeres, flannels, covert cloth, overcoatings, some cotton and fancy worsteds. Familiar with all kinds of machinery used in a textile mill. Good recommendations. 3743, Textile World Record, Boston, Mass.

Superintendent or Designer in a small woolen mill, or assistant superintendent or designer in a large mill or bookkeeper. Position wanted by a man, 46 years of age, married, Scotch. Worked on men's wear, ladies' dress goods and cloakings. Has worked in all departments in a woolen mill, has taken a course in designing and is familiar with Crompton & Knowles looms and Davis & Furber mules. Will not go West, South or Canada. Good references. 3750, Textile World Record, Boston, Mass.

Superintendent. Worked on cassimeres, unions, satinets, overcoatings, horse goods, bed blankets, linings, etc. Understands stock mixing, picking and figuring. Has had full charge of mill. 3074, Textile World Record.

Superintendent or Designer. Position wanted by a man 50 years of age, married, American. Has manufactured all kinds of woolen and worsted goods, cotton worsteds, wool, cotton and shoddy mixes. Is familiar with all kinds of machinery. Good references. 3670, Textile World Record, Boston, Mass.

Superintendent of a Woolen Mill. Position wanted by an American. Has had experience on satinets, unions, cassimeres, worsted goods, etc. Is familiar with all kinds of woolen machinery. First-class references. 1537, Textile World Record, Boston, Mass.

DYERS.

Overseer of Dyeing. Position wanted by a man 36 years of age. Worked on all kinds of woolen goods, raw stock, piece dyes and yarns. Good references. Could take a position at once, on account of the mill being closed. 3955 Textile World Record.

Boss Dyer in a Woolen Mill. Position wanted by a man 35 years of age, married, American. Worked on woolens, worsteds, Unions, Merinos, hosiery and underwear, raw stock, piece dyes and garments. Familiar with all kinds of machinery. Good references. Will not go to Vermont, New Jersey, West, South or Canada. 3974 Textile World Record.

Boss Dyer or Finisher or superintendent of both in woolen mill. Position wanted by a man 40 years of age, married. Has worked on raw stock, piece dyes, wool, cotton and shoddy, hosiery and underwear yarns, etc. Could take a position at once. Good references. 3979 Textile World Record.

Overseer of Bleaching. Position wanted by a man 35 years of age, married, American. Worked on skein yarn, tape and warps. Good references. 4008 Textile World Record.

Boss Dyer and Mercerizer in cotton, woolen, silk or hosiery mill. Position wanted by a man 40 years of age, married, American. Worked on wools, unions, silks, hosiery and cops. Familiar with various makes of machinery. Three workers in the family. Will not go West. Good references. 4004 Textile World Record.

Overseer of Dyeing in a cotton mill. Position wanted by a man 37 years of age, married, English. Worked on all standard color for ginghams, knit piece goods for underwear, skein yarns for the thread and shoe lace trade, also bleaching. Will not go West or South. Familiar with Scotch warp machines, Klauder Weldon dyeing machines, reel machine for dyeing knit piece goods. Good references. 4001 Textile World Record.

Boss Dyer in a Woolen Mill. Position wanted by a man 27 years of age, single, English. Worked on piece dyes, woolen and worsted, army and navy indigo blues (synthetic and natural), raw stock. Familiar with Woad vat, Hydrosulphite-Ammonia vat, Bisulphite vat. Good references. 3983 Textile World Record.

Boss Dyer in Knitting Mill. Position wanted by a man 53 years of age, American. Worked on shirts, drawers, cotton and wool, both in roll and garment. Familiar with all kinds of machinery. Will not go West, South or Canada. Good references. 3985 Textile World Record.

Expert Hosiery Dyer. Age 27; married and sober. Desires position of superintendent of dyeing in a first-class hosiery mill, one manufacturing high grade goods preferred. Has had over seven years' practical experience in dyeing one of the best aniline blacks on cotton, also fast colors on cotton, wool, silk and union hosiery. Best of references furnished. 2052, Textile World Record.

Overseer Dyeing. American, 28 years of age, with experience, wants position in the East. Has had experience with fast colors to work with woolen yarns, mercerized dyeing and bleaching, also web, elastic and non-elastic. 3347, Textile World Record, Boston.

Overseer of Dyeing. American, 40 years of age, with experience on woolen, cotton and silk piece goods, unions, woolen and cotton yarns, also aniline black and sulphur colors; worked on all kinds of machinery used in this work; prefers a position in the East. 3021, Textile World Record, Boston.

Secondhand in dyehouse. Would accept a position as salesman. Worked in first-class worsted and woolen mills. Age 26; American; unmarried. Can take place on short notice. 3211, Textile World Record, Boston.

Boss Dyer in a woolen mill. Has been for the past ten years with one of the largest woolen mills in the Middle States; has first-class references; 47 years of age; American. No. 3286, Textile World Record, Boston.

KNITTERS.

Superintendent of Underwear or hosiery mill. Position wanted by a man 49 years of age, married, American. Has worked on men's, women's and children's underwear in flat, ribbed and full fashioned; also hosiery in cotton, wool and merino. Familiar with all makes of knitting machines from picker to finishing. Good references. 3993 Textile World Record.

Overseer of Underwear Knitting. Position wanted by a man 28 years of age, married, American. Worked on 20 to 22 gauge fleece-lined underwear and 24 gauge Balbriggan. Familiar with Tompkins Spring needle machines only. Good references. 4006 Textile World Record.

Superintendent of a Hosiery Mill. Position wanted by a man 49 years of age, American. Worked on all kinds of wool, worsted and cotton hosiery. Familiar with all kinds of machinery. Good references. 3075 Textile World Record.

Foreman or Fixer in Knitting Mill. Position wanted by a man 34 years of age, married, American. Worked on all classes of cotton hosiery. Familiar with Standard, Acme, Invincible, Geo. D. Mayo loopers, Hepworth ribbers, Ruth Brinton, Wildman machines. Good references. 3999 Textile World Record.

Overseer of Knitting. Position wanted by a man 30 years of age, single. Worked on fine and heavy weight union suits. Familiar with Crane's rib circular machines. Good references. Will not go to Canada. 3946, Textile World Record.

Superintendent or Overseer of knitting. Position wanted by a man 45 years of age, married. Has worked on all kinds of ladies' and men's underwear, flat and ribbed, cotton, woolen, worsted. Familiar with Campbell & Clute, Wildman, Scott & Williams, and Cooper machines, also sewing machines, first class references. 3876, Textile world Record.

Overseer of Knitting. Position wanted by a man 29 years of age, married. Worked on fleece lined, balbriggans, mercerized cotton, fancy worsted, wool merino nets, heavy and light weight ribbed work. Familiar with Campbell & Clute, Tompkins Bros., Bromley & Crane, latch needle, Scott & Williams, Nye & Tredick, Fisher, and Wildman machines. Good references. 3881, Textile World Record.

Overseer of Latch Needle Knitting. Position wanted by a man 27 years of age, single. Has worked on almost all grades of stitchers of ladies' and gents' cotton and worsted underwear. Familiar with Scott & Williams, Wildman, Snyder, Nye & Tredick, Stafford & Holt and Fisher machines. Can take a position at short notice. Good references. 3873, Textile World Record.

Superintendent of a Knitting Mill. Position wanted by a man 55 years of age. Is experienced on all kinds of wool and merino underwear. Is familiar with all kinds of knitting machinery. Good references. 3620, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 26 years of age, married, American. Is experienced on men's overshirts, balbriggan ribbed goods, fleece and novelties, and is familiar with all kinds of knitting machinery. Good references. 3637, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 43 years of age, married, American. Is experienced on all classes of knit underwear, including fleece lined. Is familiar with Tompkins, Cooper, Snyder & Fisher knitting machines. Good references. 3645, Textile World Record, Boston, Mass.

Overseer of Knitting or fixing. Position wanted by a man 32 years of age. Speaks German, French, Spanish and English. Worked on sweaters, jackets, ladies' blouses, stockings, etc., on Cleas & Flentz, Bach, Gosser, Honeycomb and Jacquard. Could take a position at once. Good references. 3897, Textile World Record, Boston.

COTTON WEAVERS.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Weaving or second hand in a cotton mill. Position wanted by a man 29 years of age, American, married. Worked on all kinds of cotton goods, both plain and fancy. Familiar with all kinds of looms, Whitin, Coburn, Mason, Northrup drop boxes, Stafford, Crompton dobbies. Good reference. 3228, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Position wanted by a man, 27 years of age, American, married, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Colvin looms. Prefers a position in the East. 3430, Textile World Record, Boston, Mass.

Overseer of Weaving in Cotton Mill, or second hand with a chance for promotion. Position wanted by a man 39 years of age, married, American. Has worked on drilling, duck cloth, sheeting, crash bags, sateens, fancy ginghams and staple goods. Familiar with Crompton, Whitin, Draper, Thomas Butler, Lowell looms. Will not go West, South, Canada or to New York. Good references. 3992 Textile World Record.

Overseer of Weaving in a cotton mill, or second hand in a large mill. Position wanted by a man 22 years of age, married. Has worked on plain, sateens, twills and fancy. Some experience on lenos. Familiar with Whitin, Colvin, Mason, Lowell, Lewiston, Crompton & Knowles looms, electric stop motion. Good references. 3916, Textile World Record, Boston.

Overseer of Cotton Weaving. Position wanted by a man, 42 years of age, American, married. Worked on plain and fancy cotton goods, lappett, lenos and box work sateen worsted, either all wool or cotton mixed. Familiar with Mason, Lowell, Whitin, Draper, Crompton & Knowles, Kilburn and Lincoln looms. Good reference. Could take a position at short notice. 3798, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Weaving or Second Hand in large mill. Position wanted by a man 41 years of age, an American, married, has worked on cassimeres, fancy worsteds, suitings, dress goods and overcoatings, has had many years' experience in leading mills, understands the Crompton & Knowles looms, good references. 3703, Textile World Record.

Overseer of Weaving in a woolen mill. Position wanted by a man 26 years of age, American. Worked on plain and fancy worsteds, cotton worsteds, dress goods, cassimeres, kerseys, venetians, flannels, etc. Familiar with Knowles, Crompton, Thayer looms. Will not go to Pennsylvania, New Jersey, South or Canada. Good references. 3981 Textile World Record.

Overseer of Weaving in a woolen mill. Position wanted by a man 51 years of age, married, American. Worked mostly on ladies' dress goods. Familiar with Knowles looms. New England only. Good references. 4007 Textile World Record.

Overseer of Weaving in a woolen mill. Position wanted by a man 37 years of age, married, American. Worked on beavers, kerseys and worsteds. Familiar with Crompton & Knowles looms. Good references. Could accept a position at once. 4000 Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 32 years of age, American, married. Familiar with Crompton & Knowles looms. Worked on broad cloth, fancy woolen, cassimeres, high and low grade goods. Will not go West, South or Canada. Good references. 3900, Textile World Record, Boston.

Overseer of Woolen Weaving. Position wanted by a man, 40 years of age, English, married. Worked on woolen, worsted and cotton worsted goods. Familiar with Crompton & Knowles looms. Good reference. 3806, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Bookkeeper in a Cotton Mill. Position wanted by a man 35 years of age, married, American. Good references. Will not go to Me., N. H., Vt., Pa., N. Y., N. J., West or Canada. 4003 Textile World Record.

Assistant Bookkeeper, Cashier or Paymaster in a cotton mill. Position wanted by a man 28 years of age, single, American. Has had about 16 years' experience in office work in cotton mills. Good references. 3995 Textile World Record.

Overseer of Cloth Room in a cotton mill. Position wanted by a man 38 years of age, married, English. Worked on dimities, awnings, ticks, denims, cottonades, ducks, ginghams, etc. Familiar with Butterworth and Curtis & Marble machines. Good references. 4002 Textile World Record.

Bookkeeper or Traveling Salesman would invest some money in a paying proposition. 54 years of age, married, American. 3472, Textile World Record, Boston.

Superintendent or boss knitter. Worked on men's fine balbriggan, ladies', men's and children's wool underwear. Familiar with all kinds of knitting machinery. 27 years of age; American. 3259, Textile World Record.

Overseer of Dressing, Spooling, Winding, Twisting and Drawing In. Position wanted by a man 33 years of age, married, German. Has worked on fancy worsteds, fancy cassimeres, cheviots and piece dyes. Is familiar with Davis & Furber and Cleveland machinery. First-class references. 3627, Textile World Record, Boston, Mass.

Overseer of London Shrinking Department. Position wanted by a man 33 years of age, single. Has had 13 years' experience in the department of London shrinking. Familiar with Crawford hydraulic presses, also Curtis & Marble. Good references. 3963 Textile World Record.

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Cotton Carding, Spinning and Plain Weaving	Worsted Warp Preparation and Weaving
Yarn Reeling, Winding and Warping	Woolen Carding, Spinning and Weaving
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2

The Old Way is not Always the Best Way

It would indeed be unfortunate to believe that the mill industry as now conducted was incapable of improvement. Improvement must be made. Keen competition and a more exacting trade demands it.

As the general intelligence of a nation advances, specializing is the logical result. So in the world of trade, as competition increases, the mill man must be on the watch for those inventions which will improve the quality of his output.

This is why every mill which has scouring to do, be it raw wool, yarn or cloth, should use

Wyandotte Textile Soda

None Genuine except with a card bearing this Trade Mark

In Every Package.

This article was made especially for scouring and fulling wool andwoolens. That it should produce results much superior to those produced by the use of strong alkalies, caustic, etc is not. surprising.

Wools scoured with Wyandotte Textile Soda retain all their natural softness, lustre, elasticity, strength and color. These necessarily produce garments superior to those made from wools scoured with harsh and burning alkalies which cannot do otherwise than injure the delicate structure.

A trial of this product will prove our statements. For further information write us. We may also be able to have one of our practical men call on you.

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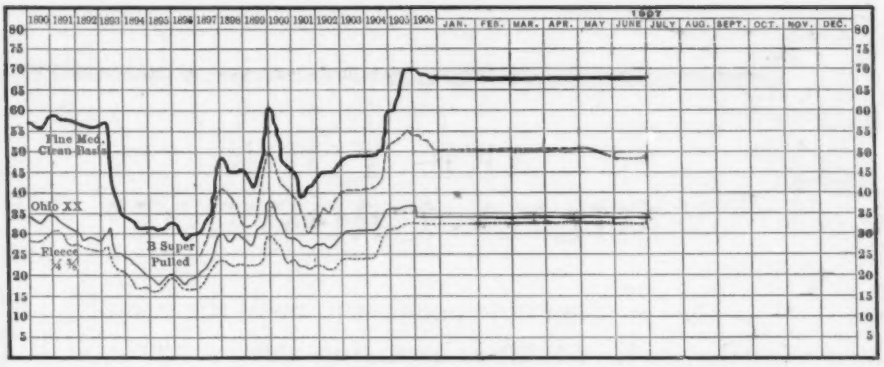


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

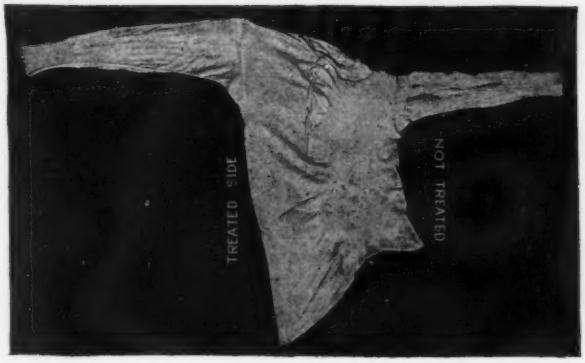
The Wool Market.

Buyers have been canvassing the market examining and sampling new wools and in this way getting ready for the real business, which will soon materialize. There have been a few large sales already, but with these exceptions business has consisted of sales of small lots. There is some complaint of the new clips being heavy, and buyers are subjecting these wools to an unusually careful scrutiny to guard against loss from a heavy shrinkage in scouring. Clothing wools are neglected. The carded woolen manufacturers have had a poor season. They do not yet see any signs of improvement, and consequently wools that are not suitable for combing are draggy. Worsted wools have the call, and owing to the small supply of domestic wools the chances are largely in favor of their being quickly taken up by the mills as soon as buyers have had time to size up the various clips.

Washington, Tacoma. It is reported that J. H. Morehead has made arrangements whereby the Montana Knitting Mills, located at Helena, Mont., are to be removed to this place.

Tennessee, Nashville. Negotiations are under way for merging the Nashville Hosiery Mills (Nashville), the Jefferson Hosiery Mills (Birmingham, Ala.) and the Royal Knitting Co. (Mt. Vernon, Ill.), under name of the National Hosiery & Yarn Co., capital stock $1,000,000. J. H. McPhail is to be president of the new company; P. C. Withers, vice-president; J. A. Bishop, secretary and Jesse H. Thomas, treasurer. The buying will be in care of Mr. McPhail. They purpose ultimately to spin their own yarns.

TRADE IS DEMANDING NON-SHRINKABLE WOOL



BECAUSE THE

FAIRWOOL Nevershrink Fearless.

Registered

IS WORKING A REVOLUTION

GET IN LINE

For information write

CHARLES H. HEYER

REAL ESTATE TRUST BUILDING

PHILADELPHIA, PA.

ARE YOUR MILLS GROWING?

The question of expansion to meet the growing demands of trade is becoming a serious problem with many manufacturers, and those in this position find that much depends upon the plant having been laid out with an eye to future growth.

Now one of the vital points in a manufacturing establishment is the power plant and its adaptability to increased demands affects largely the question of growth for the whole factory.

Write for prices on "PLYMOUTH" Manila and Sisal baling rope.

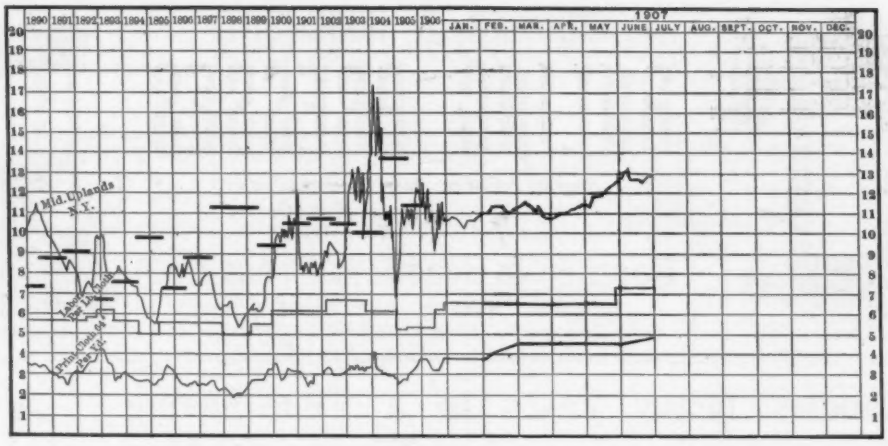
The matter of installing power equipment intended to meet the requirements of future growth of the business has been greatly simplified by the use of rope drives as a means of distributing power.

Our book on "Rope Driving" goes into the whys and wherefores of this proposition and also describes the many other advantages of rope transmission. Sent free to power plant owners.

Plymouth Cordage Co.

ESTABLISHED 1824

North Plymouth Mass., U. S. A.



The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

Favorable prospects for the new crop have not depressed the price of cotton. Subject to slight fluctuations, spot cotton has remained near 13 cents for middling uplands, while high premiums are paid for desirable lots to suit the requirements of spinners. The consumption of cotton is progressing at a record rate. The new mills in Lancashire are getting under full headway, and it will require a bumper crop to supply the world's requirements. The increased takings by spinners are illustrated by the statistics of stock on hand and movement into sight. Up to June 28 the movement into sight was 2,462,578 bales ahead of last year, while the visible stock of American cotton on same date showed an increase of only 524,712 bales. As reported by the Chronicle the movement into sight from Sept. 1 to June 28 has been as follows for a series of years:

1901-02	.....	10,083,270 bales
1902-03	.....	10,450,495 bales
1903-04	.....	9,842,043 bales
1904-05	.....	12,640,041 bales
1905-06	.....	10,574,623 bales
1906-07	.....	13,037,201 bales

The same authority estimates the world's visible stock of cotton on June 28 at 3,608,793 bales, as compared with 3,098,081 bales on same date in 1906, 3,436,233 bales in 1905, and 2,074,931 bales in 1904.

A Big Coal Proposition.

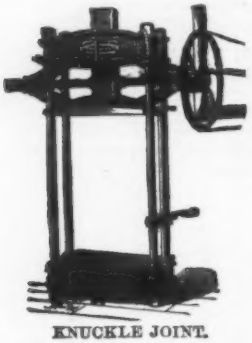
The Cross Creek Coal Company, 609 Mutual Life Bldg., Buffalo, N. Y., is the owner of a tract of seven thousand acres of the best bituminous coal land in the south, located in Marion and Franklin Counties, Tennessee. The engineer's report makes an impressive statement of earnings and profits. The new works now under construction will have a capacity of over two thousand tons per day. The management of this company is in the hands of well known people, large coal operators who are already supplying some of the biggest industrial plants in the country. They are particularly desirous of interesting with them some people connected with the textile industry and are making an attractive offer of some of their first mortgage sinking fund gold bonds, of which only a limited amount remain unsold.

Rhode Island, Providence. It is reported that the Merchants' Mfg. Co. and the American Linen Co., of Fall River, which have been operating the Allen Print Works, under lease, propose discontinuing the plant.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



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BOOMER & BOSCHERT

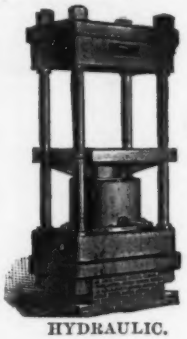
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



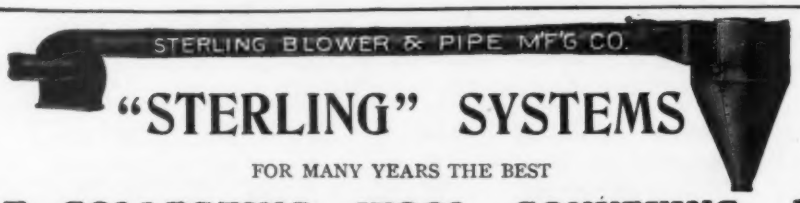
HYDRAULIC.

Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co. 58-64 N. Jefferson St. Chicago, Ill.

STERLING BLOWER & PIPE MF'G CO.



"STERLING" SYSTEMS

FOR MANY YEARS THE BEST

DUST COLLECTING, WOOL CONVEYING, ETC.

STERLING BLOWER & PIPE MFG. CO.

Write for "1907" Catalog.

HARTFORD, CONN., 1027 Huyshope Ave. New York Office, 109 Liberty St.

A Rigid Examination Reveals No Defects in the

CROSBY SPRING-SAVE GLOBE AND ANGLE VALVE.

NO BETTER VALVE CAN BE MADE.

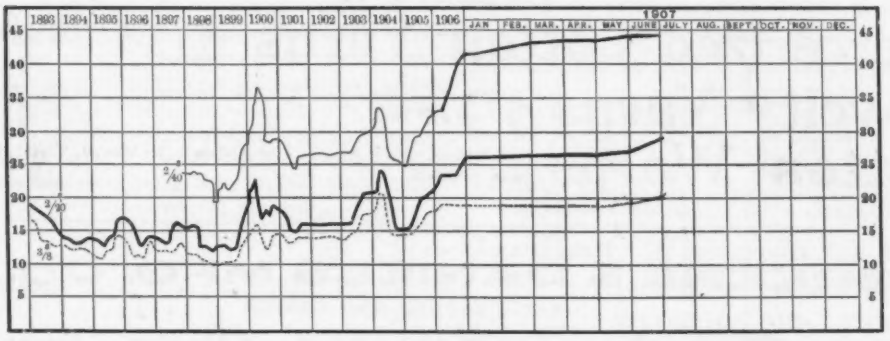
All Working Parts Renewable Without Removal from Piping. ALL PARTS INTERCHANGEABLE. THEY have a full opening through them. WHEN COMPLETED ARE TESTED under more than 400 lbs. pressure. We guarantee them NOT TO LEAK AT HIGH PRESSURES. MADE IN BRASS AND IRON in the various styles furnished to the trade. **Try One or More Valves and BE CONVINCED.**

CROSBY STEAM GAGE AND VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: **BOSTON, MASS.**

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

It is still a seller's market. The continued high price of the raw material would alone prevent any general weakening of the yarn market. Added to this, moreover, is the strong demand for yarn from both knitters and weavers. In the present state of the goods trade it would probably take a very large decline in the price of raw cotton to affect the quotations on yarn. Spinners are sold far ahead and their chief concern is to get help to keep the machinery in operation. This trouble will be at its height during the summer months and spinners will have an opportunity to exercise all the patience they possess when seeing their operatives enjoying vacations while the spinning machines are idle and buyers are clamoring for deliveries. As far as supply and demand are concerned spinners occupy an exceptionally strong position, and one that is not likely to weaken materially in the near future.

Eastern Cops.

6s	23¼
8s	23¾
10s	24¼
14s	25¼
16s	25¾
18s	26¼
20s	26¾
22s	27¼
24s	28¼
26s	29¼
30s	31½
34s	35
36s	37
40s	41

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	26
14s	26½
18s	28
20s	29
24s	31
26s	32
30s	36
36s	41
40s	46
45s	49
50s	56
55s	61
60s	66

Eastern Two-Ply Warps, Carded Peeler.

2/30s	37
2/36s	42
2/40s	47
2/45s	50
2/50s	57
2/60s	67

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	44
36s	46
40s	49
45s	53
50s	58
55s	63
60s	68
70s	75

C. WOLFENDEN,
2316 N. Second Street, Philadelphia, Pa.
DEALER IN
YARN AND MACHINERY
Will buy Odd Lots of Yarn of Any Kind. Send Samples and Cash Price.

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.

The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

FRANK A. TIERNEY,

206 West Broadway, New York, N. Y.

WOOL, SILK, MOHAIR, CAMEL HAIR, RAMIE.

Ramie Tops, Ramie Noils, Silk Tops, Silk Noils, Ramie Yarns, Silk Yarns, Silk Noil Yarns.

Prepared Tussah Silk for Woolen Manufacturers, ready for immediate use on regular woolen machinery.

Mercerized and Plain

Skein, Warps, Cones, Cops, Tubes

COTTON YARNS

426 and 428 Market St., Phila.

Theo. H. Strouse & Co.

The Philadelphia Yarn Market.

The yarn market during the last four weeks has taken an upward turn, which has carried prices from 1 to 3 cents per pound above the basis that was ruling in May. The greatest advance has been made on knitting yarns. These have not been selling on a parity with weaving yarns, but today in coarse numbers knitting yarns are selling at slight advances over weaving yarns. The demand is exceptionally good and will probably continue during the summer and into the fall.

Weaving yarn is being held firm at top prices for the year. New orders at full advance prices are not very plentiful, but enough business is being done to prevent any accumulation of yarn.

Cotton has advanced, and 15 cents is the minimum price for anything like a good spinning grade.

Manufacturers of men's wear complain of a dullness in trade. Hosiery and underwear manufacturers as a rule are busy and well supplied with orders.

We quote as follows for such delivery as can be obtained from spinners:

Southern frame spun cones:—

7s and coarser	22½
8s and 9s	22¾
10s	23
12s	23½
14s	24
16s	24½
18s	25
20s	25½
22s	26½
24s	27½
26s	28½
30s	31
40s	44
50s	56

Southern high grade mule yarn:—

	Cones.
10s	25
12s	25½
14s	26
16s	27
18s	27½
20s and 22s	28-29
24s	29½

Southern frame yarn, lower grades:—

6s and 8s	22
10s	22½

Eastern cones (high grade quality):—

10s	25½
12s	26
14s	26½
16s	27½
18s	28
20s and 22s	29-30

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
DEP'T. FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

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J. H. HART
J. R. TOLAR, JR.
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TOLAR & HART
Cotton Yarns and Cotton
TEXTILE BUILDING
Members of New York Cotton Exchange
66-72 LEONARD ST. NEW YORK

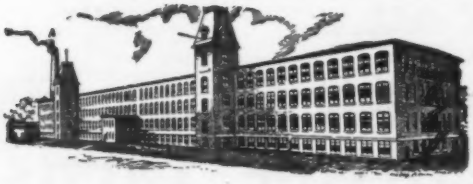
Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS
MERCERIZED YARNS } ALL NUMBERS FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

G. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Main Office and Mills at Pawtucket, Rhode Island.

Carded and Combed Cotton Yarns for Weavers and Knitters.

Double and Twist Yarns for Woolen Trade.

Philadelphia Office, Mariner and Merchant Building, Third and Chestnut Streets.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. **WARPS**

Ballou Yarn Co.

PROVIDENCE, R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

Wm. Chalmers & Co.

(Incorporated)

Imported and Domestic Cotton Yarns.

Turkey Red Yarns a specialty.

Correspondence solicited.

43 Leonard St. - - NEW YORK.

Scranton Yarn Finishing Co.

SCRANTON, PA.

Dyers of Skein Silk, Pure Dye and Weighted.

Mercerizers, Dyers and Coners.

THE RAVINE MILLS CO.

MANUFACTURERS OF

COTTON WARPS

In White and Colors on Beams and Jackspools

Specialty of Fast Black Twist on Jackspools.

VERNON, CONN.

G. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.

Established 1860—Incorporated 1892.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

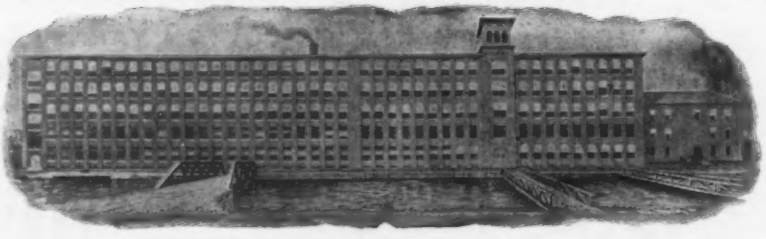
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Indian Orchard Company

Indian Orchard Mass.



E. Morgan, Pres.
H. K. Wight, Treas.
W. C. Godfrey, Ag't.

Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.

Cotton Warps and Yarns, In Gray and all colors, single or two or more Ply, and Cable Cord.

Novelty Yarns In various Patterns Colors and Twists.

Skein yarn (mostly Southern):—

4s and 8s soft	20½
10s and 12s	21-21½
14s to 20s	22-24
22s	24½
14/2	23
16/2	24
20/2	27
30/2	32
40/2	44
16/3 slack	23½
12/3 slack	22
8/3 carpet	20
8/3 slack	20
9/4 slack	20

Warps (Southern):—

10s to 12s	21½-22
14s	22
16s	23
20s to 22s	24-24½
26s	27
14/2	24
16/2	25
20/2	27
24/2	29½
30/2	33
40/2	44-45

Mixed colored yarns (mock twist, half colors):—

6s to 10s	22½-23
12s to 14s	24-25
16s to 18s	26-27

Mock Egyptian, 2c. advance over white.

Egyptian, 7 to 8c. above best quality white.

*Oregon, Portland. The Ross Wool Scouring & Mfg. Co., which started operations in February, has an equipment of 3 sets cards, 10 looms and 7 knitting machines. Also dye house. Company is capitalized at $75,000; Thomas Ross, president and A. C. Mowery, treasurer.

Pennsylvania, Clifton Heights. The Thos. Kent Manufacturing Co., manufacturers of woolen and worsted uniform cloths, are now running 200 broad looms, having dispensed with the 100 narrow looms which they formerly operated in conjunction with their 166 broad looms. The mills are now run on broad goods only.

*Rhode Island, Glendale. Wm. Orrell is president and treasurer and F. W. Orrell, superintendent, of the Orrell Mills, Inc., recently organized with capital stock of $50,000. The product of this plant, which is equipped with dye house, and 7 sets and 54 looms, making fancy worsteds, cassimeres and cheviots for men's wear, is sold through E. B. Moore & Co., New York.

Established 1863 *Incorporated 1893*

W. Warren Thread Works

Makers of High Grade

SPOOL COTTON

of every description for the manufacturing trades

Mills: Westfield, Mass.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin Street, NEW YORK.

Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

DUNCAN & YOUNGS

95 Worth Street, NEW YORK

Practical Manufacturers of

YARNS, THREADS, TWINES, CORDS, ROPE

AND MILL SUPPLIES

Anything in the line you cannot get anywhere else apply to us.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

Box Shook

and

Lumber

THE CONNECTICUT BOX CO.

New Haven, Conn.

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. **Address Inquiries to Rainbow, Conn.**

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

Bradford System French System

STEPHENSON & CO.

Worsted and Woolen Yarns

240 Chestnut Street
PHILADELPHIA.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills.
The French Worsted Co.

300 Chestnut Street,
PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

F. W. MAURER & SONS CO.

MANUFACTURERS OF

TAPES, BINDINGS, NARROW FABRICS AND EDGINGS FOR NOVELTY CURTAINS

Office, 528 Cherry St. Factories, 529 & 531 Arch St. and 524 Cherry St., and Germantown Ave. & Bristol St.
PHILADELPHIA

HOFFMAN, DeWITT & McDONOUGH CO.,

Manufacturers of

Diamond Stay Bindings
TRADE MARK

Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA

Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

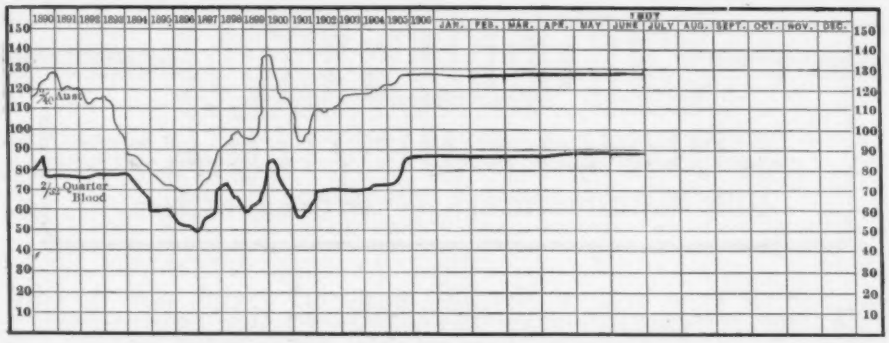


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

The Woolen and Worsted Yarn Market.

The woolen and worsted yarn market at this time is very firm and quiet with some spinners looking for business and others being pretty well stocked up. Comparatively speaking, the knitting trade is in better shape than the weaving trade, but both branches of the industry are buying from hand to mouth and are of the opinion that it is better for them to let the spinner carry the stock and take the chances.

The dress goods and men's wear manufacturers, on account of the late season, have been held up and they do not look for much business until after the 15th of July, when their men go out on the road and get a chance to size things up. The weather now in force has had a tendency to make buying better and both the manufacturers and spinners are looking forward to a better business within the next few months.

We quote on worsted yarn as follows:

Bradford Yarn.

2/12 to 2/16 low common	72½-75
2/12 to 2/20 1/4 blood	79½-82
2/32 1/4 blood	84½-86½
2/26 3/8 blood	92-94½
2/36 3/8 blood	95-1.00
2/40 delaine	1.20-1.22½
2/40 Australian	1.30-1.32½
2/60 Australian	1.49½-1.52
2/28 luster	85-90
2/36 luster	95-100

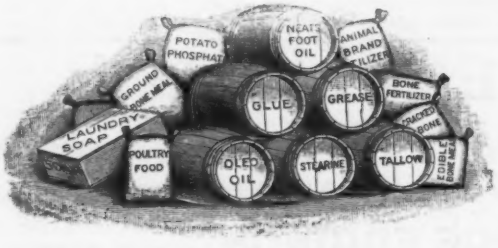
French Spun Yarn.

1/20 1/4 blood	85-87½
1/20 high 3/8 blood	1.00-1.02½
1/20 3/8 blood	1.05-1.07½
1/30 3/8 blood	1.05-1.07½
1/20 1/2 blood	1.10-1.12½
1/40 1/2 blood	1.15-1.17½
1/40 Australian	1.32½-1.35
1/60 fine Australian	1.40-1.45

Oregon, Portland. It is reported that C. P. Bishop of the Salem Woolen Mills is interested in plan under way for utilizing the falls of the Clackamas River for operating woolen mills. The proposed site for the woolen mill is about ten miles from this city.

Pennsylvania, East Brady. The East Brady Woolen Co., with a capital of $50,000 and the following officers: H. Sidenberg, president; M. J. Rich, treasurer and R. W. Steele, secretary and manager, are very busy operating 5 sets wool cards and 18 broad looms on fine wool shoddies and blankets, which they dye and finish, selling direct.

Rhode Island, Thornton. The Pocasset Worsted Co. is to close the plant during Old Home Week.



Tallow for Sizing Especially Prepared

FOR COTTON AND WOOLEN MILLS

Consolidated Rendering Co.

40 N. Market Street, Boston.

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

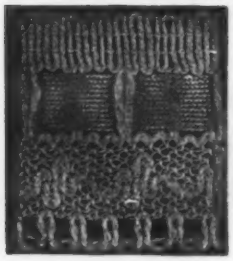
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.



GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 12 to 32s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached, Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Point Laces.

229 Church Street 231 . . PHILADELPHIA

NON-FLUID OILS

DROP UPON DROP——HERE A LITTLE—THERE A LITTLE

So it goes with **Fluid Oils**, always spattering, wasting and soiling instead of each drop doing all the work in the **Economical** way like

THE STANDARD NON-FLUID OILS

Have you the oil-wiping Habit?
It is expensive, but you can get rid of it easily by adopting **NON-FLUID OILS** which lubricate fully and completely for every drop applied to the machinery saves time and money since none is wasted in soiling goods or clothing, machinery, walls, floors.
Send for free samples giving us particulars regarding the bearings on which you will test it.

New York & New Jersey Lubricant Co., Dept. H, 14-16 Church St., New York City.

Wisconsin, Neenah. The Neenah Knitting Company has disposed of its entire plant to Mahler Bros., of Milwaukee, Wis. The entire equipment will be removed to the latter place.

Pennsylvania, Philadelphia. The Prudential Worsted Co., with George W. Kritler, George W. Kritler, Jr., and Hope W. Corson, as incorporators, has applied for a charter. The plant is now run under the name of the Prudential Worsted Mills with George W. Kritler as proprietor and is located at Wayne Ave. and Berkeley St., Wayne Junction, where they are operating 62 broad looms on worsted and woolen dress goods, selling the production through New York.

Pennsylvania, Philadelphia. A notice has recently been issued to the effect that on Tuesday, June 18, the carpet and rug yarn plant of Whitaker & Bro., located at Trenton Ave. and Sargeant St., will be sold at public auction. The plant contains 5 sets of cards and 1,000 spindles.

Pennsylvania, Philadelphia. A charter has been applied for the John T. Bailey Co. with Walter A. Bailey, William G. Bailey and John H. Morice as incorporators. The company manufactures bags, ropes and twines at Front and Tasker Sts., and is known as John T. Bailey & Co.

South Carolina, Charleston. It is reported that business men of Asheville, N. C., have offered to raise $100,000 toward formation of a company to build a cotton waste mill at Charleston, provided $100,000 is furnished by the Manufacturers' Association. A convention of the Association was recently held at Asheville.

Tennessee, Chickamauga. Property has been purchased at this place by a company for purpose of establishing a bleachery. A. S. Bowen, D. A. Jewel and Hutchison of Chattanooga are interested.

Virginia, Stuart. M. V. Stedman of this place is reported as interested in establishing a cotton mill.

Washington, Seattle. The Standard Woolen Company has been reported incorporated with capital stock of $300,000. Geo. E. Warren, E. Howard and W. H. Gafford are mentioned as interested.

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.
Boston Office, 200 Summer St.

EDWIN F. SCHOFIELD
ALL GRADES
PULLED AND FLEECE WOOLS
FOREIGN NOILS, CARPET WOOLS.
COTTON WASTE
New York Office 256 Church Street
Mariner and Merchant Building,
3d and Chestnut Streets, Philadelphia, Pa.

JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

Barrett Specification Roofs

STANDARD FOR FIRST-CLASS BUILDINGS

THE almost universal use of Coal Tar Pitch and Felt Roofs laid along the lines of The Barrett Specifications, for manufacturing plants, is an index of their ideal suitability for the purpose.

Many roof materials fail when exposed to the corrosive fumes which are always present in coal smoke or around blast furnaces, forges, etc., but the Coal Tar Pitch and Tarred Felt which comprise a Barrett Specification Roof are immune.

Moreover, manufacturing plants are usually of large area and permanent in construction. Both first cost and maintenance cost are important considerations in deciding the kind of roof to be used, and experience has demonstrated that a Barrett Specification Roof *costs less than any other kind* owing to its remarkable durability.

For skyscrapers—expensive structures that could afford whatever kind of roof is most desirable — Barrett Specification Roofs are likewise almost universally adopted. That is because such roofs require no care, and conform to the requisite standards of fireproof construction, taking the base rate of insurance.

Modern reinforced concrete structures where fireproof material is required are best covered with Barrett Specification Roofs. The great new Ketterlinus Building, the first reinforced concrete skyscraper in Philadelphia, illustrated herewith, is a typical instance.

The best practice of the day is making the use of Barrett Specification Roofs for all large buildings and manufacturing plants as standard as Portland Cement.

We shall be pleased to send a Booklet covering the subject in detail.

BARRETT MANUFACTURING CO., New York, Chicago, Philadelphia, St. Louis, Cleveland, Cincinnati, Allegheny, Minneapolis, Kansas City, New Orleans, Boston, London, Eng.

KETTERLINUS BUILDING
FIRST CONCRETE SKYSCRAPER TO BE ERECTED IN PHILADELPHIA

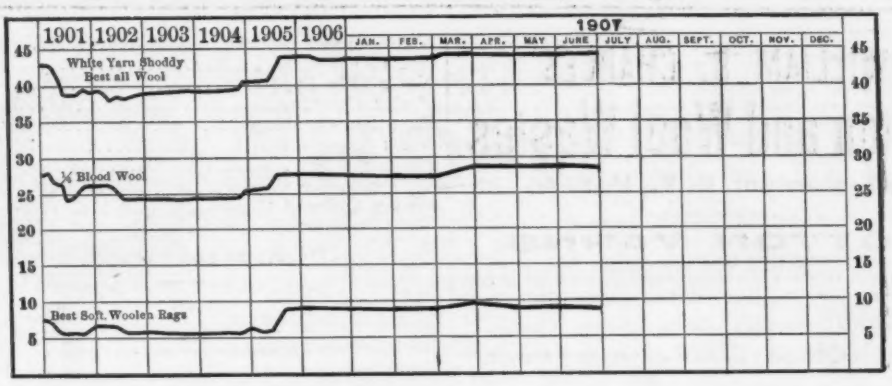


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

The Rag and Shoddy Market.

These markets are practically at a standstill. Buyers have bought only in small quantities to supply immediate wants, and there have been no indications of an early revival of business. The doubt found on all hands regarding general business throughout the country is making this the dull season in the rag and shoddy market more than ordinarily dull. In spite of the dullness prices have been held up well on the small sales made. Probably offers for large lots at lower prices would be accepted, but no one is prepared to make them. We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	40
White knit, all wool, best fine	35-40
White knit, No. 2	28-30
Light yarn, extra fine	25-28
New pure indigo blue	24

Merino.

Fine light, all wool	26-28
Medium light, all wool	18-20
Fine black, all wool	26-28
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 2	15-17
Red knit stock, strictly all wool	22-24
Red flannel, all wool	22-24
Dark blue for hosiery, strictly all wool, No. 1	18
Dark blue for hosiery, not all wool, No. 2	14

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-14
Browns	11-12
Blacks	9½-10
Fine blues, plain	9-10
Fine dark	11-12½
Medium dark	7-8

Worsteds.

Blue	16-18
Black	21-23

Serges.

New black	16-18
New blue	15-17

Flannels.

New scarlet	18-19
New blue	15-16
Cloakings	3-3½

SOFTS AND KNIT STOCK.

Soft woolens, best	7½-7¾
Old white flannels	16-19
Old red flannels	13¼-14
Old blue flannels	6-7
Old plaids	4½-5
White stockings	24-25
White hood stock	24
Clear hoods	10-11
Blue stockings	9¾
Fancy stockings, No. 1	9½
Gray stockings	11-12
Black stockings	9-10
Knit stock comforters	
Red knit	12-12½
Light gray knit	9-10
New light fancies	10
New fancies	10¾-11¾

Merinos.

Light, fine	14-15
Light, coarse	7-7½
Fine, dark	14-15
Coarse, dark	6¾-7½
Blue	
Black	13-14

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	8-9
Fine black and blue, all wool	6½-7
Fine dark, all wool	4½-5
Gig, fine, all wool	1¾-4
No. 1 black, all wool cut	6-8

COTTON WASTE.

No. 1 Spinners	9
No. 1 Machine Cop	8¼
No. 2 Machine Cop	6
No. 1 Cop	8¼
No. 1 Card	6½-7

WILLIAM B. CHARLES,
Cotton and Wool Wastes
Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Boston Office: 200 Summer Street.

SHODDY W. H. H. SLACK & BRO. SPRINGFIELD, VT.
Established 1871 FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.
RIVERDALE WOOLEN CO., MANUFACTURERS OF
.. Shoddies ..
of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Specialty.
New York Office:
140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

East Brady Woolen Company
Manufacturers of
WOOL SHODDIES
Samples on application
EAST BRADY, PA.

No. 2 Card	5½
No. 1 Oily Card	4
No. 2 Oily Card	3
Peeler Combing	
Egyptian Combing	7½-8
No. 1 Linters	4½
No. 2 Linters	4
Woven White Clips	6
Woven Colored Clips	2-2½

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2⅛-2.35
Citric, domestic	52-52½
Oxalic	8¾-9¼
Sulphuric, 60 deg., 100 lbs.	1.00-1.50
Muriatic, 18 deg.	1.10-1.75
Tartaric crystals	28¾-29¼

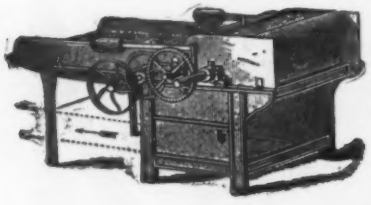
Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.50-2.55
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	3.00-4.00
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	6-6½
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.50
Copperas	55-65
Cream tartar, crystals	23¼-23¾
Fuller's earth, powdered, 100 lbs.	80-85
Glauber's salt	45-55
Potash, chlorate, crystals	8¾-9½
powdered	9-9¾
carbonate	4-4½
Soda ash, carbonate, 48 per cent.	1.00-1.50
high test	
Soda, bicarbonate, English	3
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. American	70-80
Sulphate, alumina	1½-1¾
Vitriol, blue	7¼-7½

Dyestuffs.

Acetate of soda	4¼-4½
Acid, picric, best crystals	22-28
tannic, commercial	34-38

Geo. W. Gerry & Son, ATHOL, MASS.
MANUFACTURERS OF
Lumpers,
Wool and Waste Dusters,
Rag Dusters, Nappers.
Improved Cloth Measuring Machines.
Lumper and Duster Cylinders Refilled and Repaired.



FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1906	$20,839,174
LIABILITIES (Including Capital)	13,430,818
NET SURPLUS OVER ALL LIABILITIES	7,408,355
Surplus as regards Policy-holders	10,408,355
Losses Paid Since Organization Over	105,000,000

Note amount of net surplus after providing for all San Francisco losses.

HOME Policy-holders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

ELBRIDGE G. SNOW, President.

EMANUEL H. A. CORREA, Vice-Pres. AREUNAH M. BURTIS, Secretary.
FREDERICK C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Ass't Sec'y. HENRY J. FERRIS, Ass't Secretary.

Albumen, egg	59-75
blood	22-30
Alizarine, red	15½-16½
Aniline, oil	11¼-12
salt crystals	9⅞-10½
Antimony salt, 65 per cent.	24½-27
Bichromate of potash, American	8⅝-9
Bichromate of soda	7⅛-7½
Bisulphite of soda	80-1⅜
Cutch, mat	4¾-7
boxes	5-7
Dextrine, imported potato	5¾-7
corn	2.75-2.90
Divi-divi, ton	47.50-55.00
Flavine	23-40
Fustic, stick, ton	17.00-20.00
young root	45.00
Gambier	4½-5
Hypo. of soda, Am. bbls. cwt.	1.40-1.55
Indigo, Bengal, low grade	55-65
medium	62½-75
high grade	77½-90
Kurpahs	50-60
Gautemala	35-70
Manila	45-50
Madras	45-50
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	18.00-22.00
roots	16.00-19.00
Madder, Dutch	13½-15
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1⅛-1½
Nutgalls, blue Aleppo	18-19
Persian berries	20-25
Phosphate of soda	1.80-2¼
Prussiate of potash, yellow	16¼-16½
Quercitron, ton	25.00-30.00
Starch, corn, pearl, bbls.	2.35
corn, pearl, bags	2.20-2.40
potato	3½-4
rice	6½-7
wheat	4¾-5¼
Stannate of soda	9¾-10
Sumac, Sicily, No. 1, ton	90.00-92.50
Sicily, No. 2, ton	87.50-90.00
Tapioca flour	2½-4
Tin crystals	25¾-30
Turmeric, Madras	6½-7
Zinc dust	6-6½

Pennsylvania, Philadelphia. The Philadelphia Thread Co., which was recently sold out at public sale to satisfy the claims against it by its creditors, was purchased by Wm. Fassnacht of C. J. Webb & Co., Inc., for the sum of $3,000. Mr. Fassnacht states that he will not start the plant up again.

Tennessee, Memphis. The Memphis Cotton Press & Storage Co. is to erect a large warehouse and compress plant. Buildings will be equipped with modern machinery.

Texas, Gonzales. The Gonzales Cotton Mills have been leased by Messrs. Miller, Sayers & Co. This plant is equipped with 5,000 spindles and 150 looms.

ARABOL MANUFACTURING COMPANY,
100 William Street, New York.

Sizing, Stiffening, Softening and Finishing Compounds, Glues, Gums, Dextrines, Starches, China Clay, Bone Size and Grease, Soap, Tallow, Weighteners,
EVERYTHING IN SIZINGS, Etc. SAMPLES MATCHED. HIGH GRADE GOODS.

"WE LIVE BY DY(E)ING"

WE DYE
cotton, mercerized, woolen and worsted yarns

WE DO
CONE WINDING

WE BLEACH
cotton and mercerized yarns

The Western Thread and Dye Works, Chicago.

Cohoes Dyeing Company

195 Mohawk Street, Cohoes, N. Y.

Dyers and Bleachers for the Knit Goods Trade

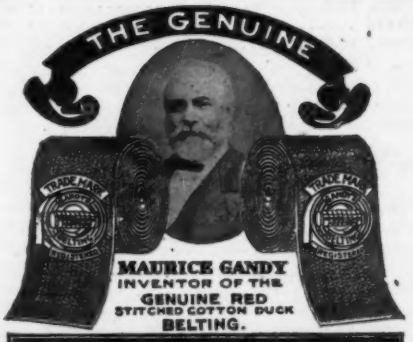
ROLL AND GARMENT DYEING

Fast colors on Wool and Cotton. Sulphur Blacks on Cotton (Raw Stock)

Creosoted Flooring never rots

Floor planks treated by our process are laid just like an ordinary floor and are so long lived that they are ideal for Dye Houses, Wet Finishing Rooms or whatever processes keep the floors wet. Creosoted Flooring retains all of its original strength, never rots under any conditions and does away with the expense and annoyance of frequent renewals. It's a saving and satisfactory solution of the floor problem. Tell us the style, width and thickness of your flooring, the quantity required and we will tell you what it will cost.

The Barber Asphalt Paving Co.
Main St, Maurer, N. J.



GANDY
PATENTED 1877

Think of this saving to textile mills, bleacheries, dyehouses, etc.

"One Gandy belt outlives two or three leather belts because of the intense heat in our starching room" says The Call Manufacturing Co. Of course it does, not only in the heat but under any other condition, and mind you—Gandy costs less than half what a leather belt costs.

Look for the stamp "GENUINE GANDY" at every tenth foot, also Trade Mark—coil of belt, bale of cotton and name. Send for booklet. "Experiences with Gandy"

Its worth reading.

THE GANDY BELTING CO.
BALTIMORE, MD.

FIRTH & FOSTER CO.

Dyers and Finishers

York, Emerald and Adams Sts., Philadelphia, Pa.

New York Office, Silk Exchange Bldg., Cor. Broadway and Broome Sts.

Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas. Panamas, Poplins, Serges and Cheviots. Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eolliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

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51 AND 53 FRANKLIN STREET, NEW YORK

PAPER AND TWINE MERCHANTS

FOR FINISHERS OF TEXTILE FABRICS

"ROYAL" PRESS PAPERS

Established 1881.
Peter B. McManus, Pres. and Treas. Peter B. McManus, Jr., Asst. Treas. Edw. J. McCaughey, Sec'y.

HOME BLEACH and DYE WORKS, Inc.,

DYERS AND BLEACHERS OF COTTON YARNS
Fast Colors for the Woolen Trade. Capacity 20,000 lbs. per day.
Office and Works, Pawtucket, R. I.

Germania Dye Works

MAX SARFERT, Prop.

Dyeing, Coneing, Twisting and Tubeing of Cotton, Woolen and Worsted Yarns.

Dyers of Cotton Warps and Hosiery in Fast Black and Colors.

Dealers in all Kinds of Yarn for the Trade.

"N. B. We are successfully dying cotton yarns on parallel tubes and would be pleased to send a sample to interested parties."

Cross-Dye Colors a Speciality.
Yarns Furnished on Dresser Spools.

Kensington and Allegheny Aves., Phila.

Pawtucket Dyeing and Bleaching Co.

Bleachers and Dyers of COTTON YARNS and STOCKINET

Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

232 Front St., Pawtucket, R. I.

THE PEERLESS COMPANY,

Dyers of Skein Silk
FOR ALL TEXTILE PURPOSES

Willard and Jasper Sts., Philadelphia.

Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

Dont Worry About the Finish

of your cotton goods our

"LOYDALENE" FINISH

can fix it

Tell us your trouble anyway—we can help you

Nicetown Mfg Co. 4303-09 No. 18th St., Philadelphia.

MILL SOAPS AND TEXTILE SPECIALTIES

The WM. H. LORIMER'S SONS CO.,

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

MERCERIZERS AND DYERS.

New York Office:
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Ontario and Lawrence Sts.,
PHILADELPHIA, PA.

JOHN F. DAVIDSON, Orianna Bleach Works.

BLEACHERS

Of Turkish Towels, Cotton Yarns, Underwear and Tapes.

Turkish Towels Made Up to Suit the Trade and Shipped to any Point.

2558-2564 North 3d Street, 2557-2563 Orianna Street, PHILADELPHIA.
Office, 2557 Orianna Street. Correspondence Solicited.

GLOBE DYE WORKS CO., Successors to R. Greenwood & Bault

DYERS BLEACHERS AND **MERCERIZERS**

OF COTTON WARPS AND SKEIN YARNS

Globe Bleach and Dye Works,
Oxford and Worth Sts., Frankford, Pa.

140 Chestnut St., PHILADELPHIA.

We are Dyers of all kinds of YARNS AND **Cotton Warps**

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

T. BROPHY'S SONS, Jasper St., above Clearfield St., - PHILADELPHIA, PA.

YARNS BLEACHED AND DYED (delivered on cones)

BLEACHING and DYEING

ESPECIALLY FOR THE

KNIT GOODS TRADE

CONE WINDING FOR THE TRADE

Schuylkill Haven Bleach and Dye Works, SAMUEL ROWLAND, **Schuylkill Haven, Pa.**

N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

INCRAHAMVILLE DYE WORKS,

Dyers and Bleachers of Cotton Yarns in Long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, Etc.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

Telephone. PAWTUCKET, R. I.

Duxbury's English Calender Roll Papers

FOR EMBOSSING AND OTHER CALENDERS.

CHAS. A. JOHNSON & CO. Sole Agents for America

55-57 Franklin St., NEW YORK.

DYE STICKS

Drying and Sulphur House Poles of Natural Round Water Grown Cedar for Cotton, Wool, etc. Special Hardwoods in Standard No. 1 and "Selects" without knots, grades, for Silk Dyeing. Manufactured by, prices and all information from

E. M. HAEDRICH,

604 Mariner and Merchant Bldg., ... Philadelphia.

A. KLIPSTEIN & CO.

Dyestuffs and Chemicals

Fast Colors for Wool and Cotton.
Full Line of Direct Cotton Colors.

THIOPHENOL BLACK T EXTRA and 2 B EXTRA.
PYROGEN BLUE R . . . .
PYROGEN INDIGO. . . . .

} Direct Sulphur Colors, Faster than Indigo, to light and Washing.

Chrome Fast Blacks, Blues, Browns and Yellows.
Acid Benzyl Blue, Violet Green and Black.

Headquarters for Caustic Potash 90%. Carbonate of Potash. Chlorate of Potash and Soda. Tannic Acid. Bleaching Powder.

122 Pearl Street, .. NEW YORK

BRANCHES

Boston Providence Philadelphia Chicago Hamilton and Montreal, Canada

SOLE AGENTS FOR

The Society of Chemical Industry, Basle, Switzerland.

The WM. H. LORIMER'S SONS CO.,

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

MERCERIZERS AND DYERS.

New York Office:
Room 911 New York Life Building,
346 Broadway.

Ontario and Lawrence Sts.,
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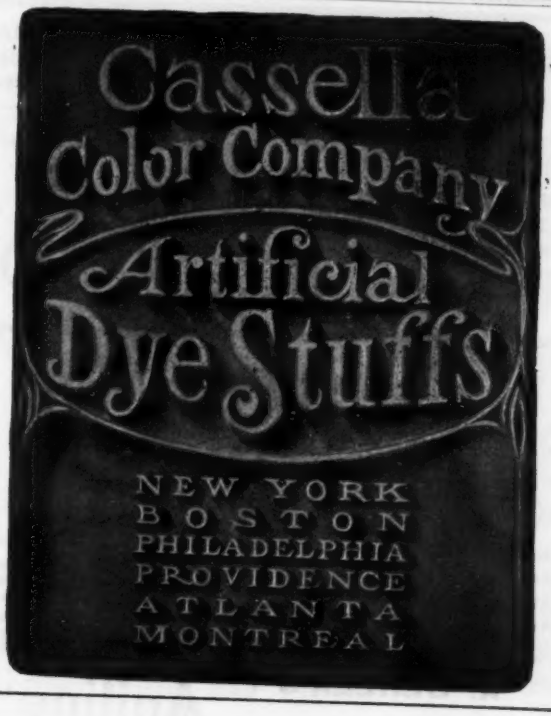

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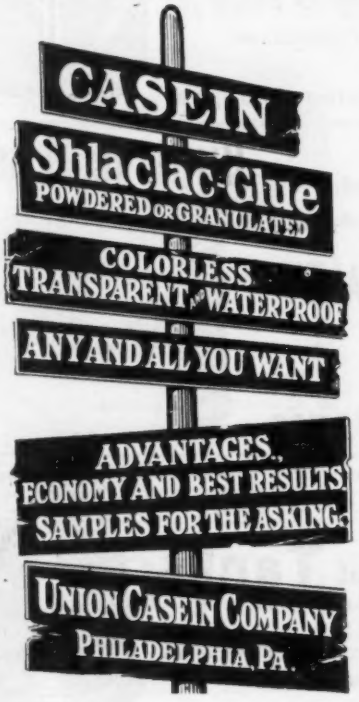

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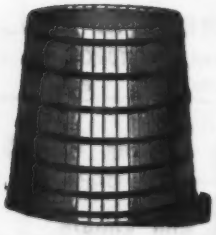

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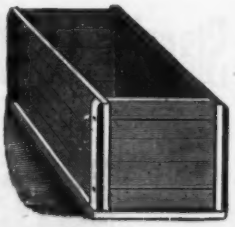

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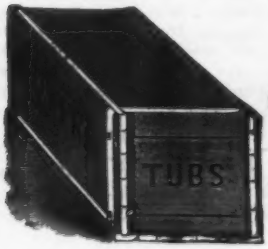

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without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

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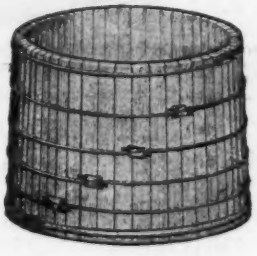

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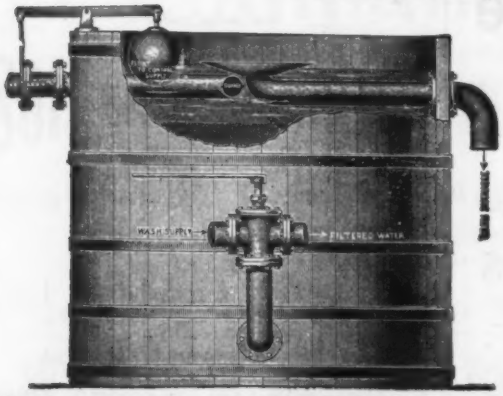

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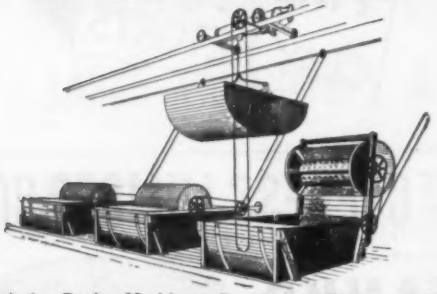

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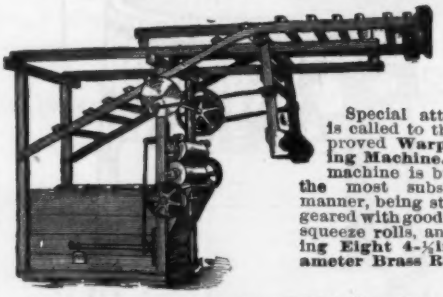

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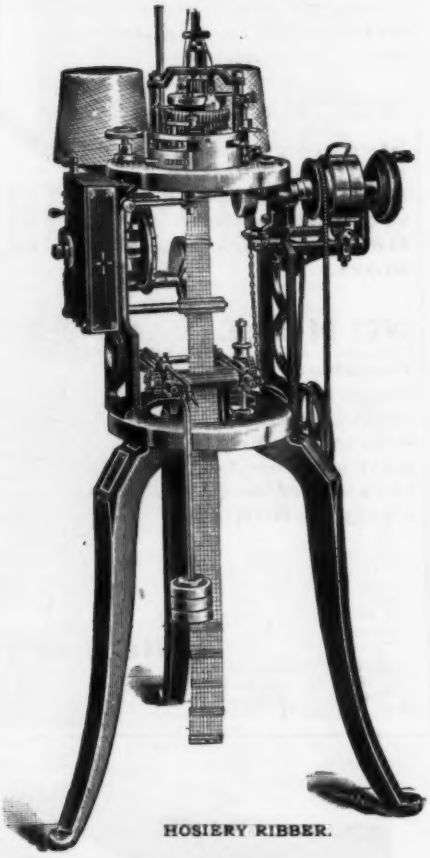

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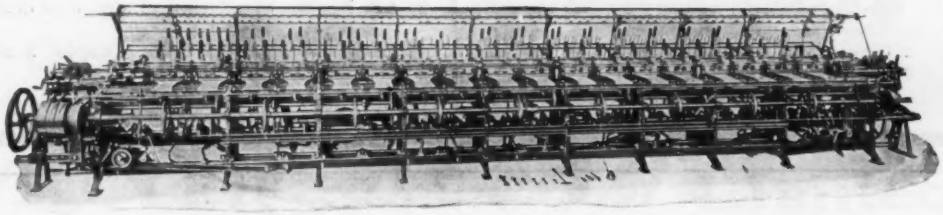

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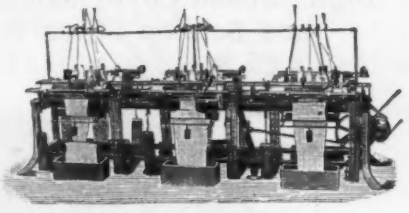

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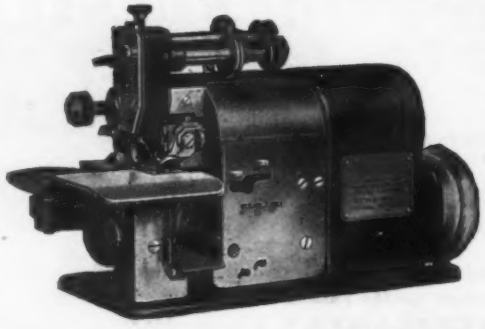

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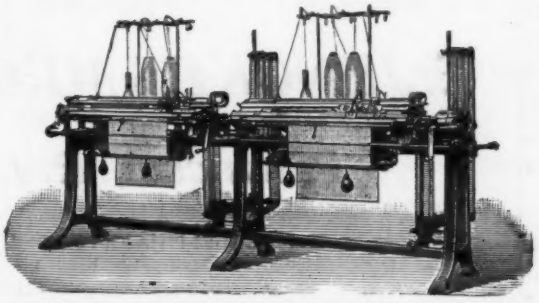

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PHILADELPHIA OFFICE,
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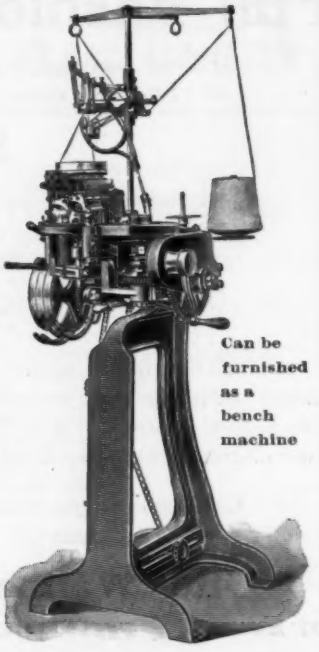
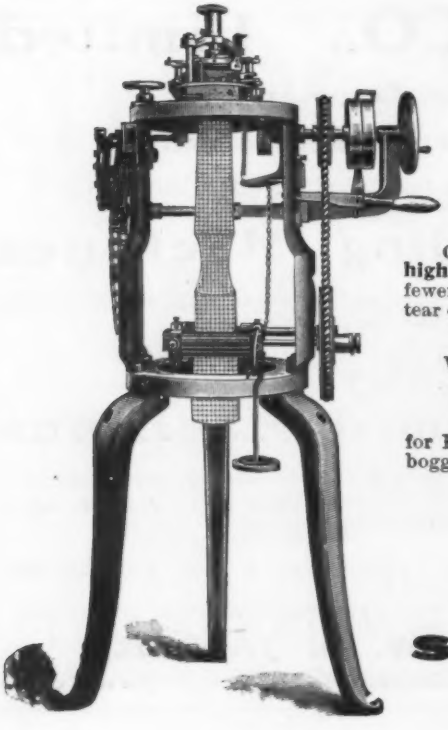


Can be furnished as a bench machine



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at very high speed, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

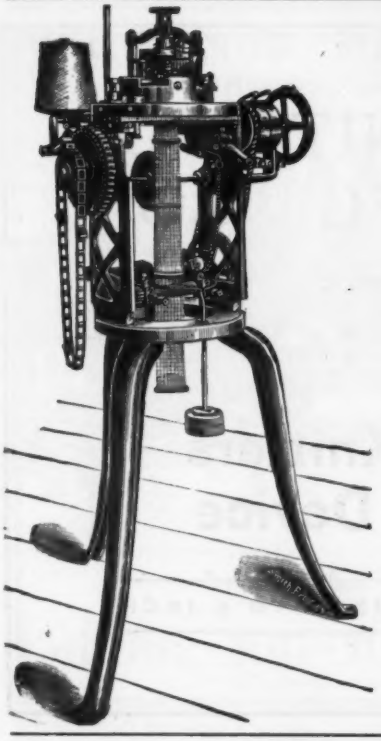
STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

STAFFORD & HOLT,

LITTLE FALLS, N. Y.



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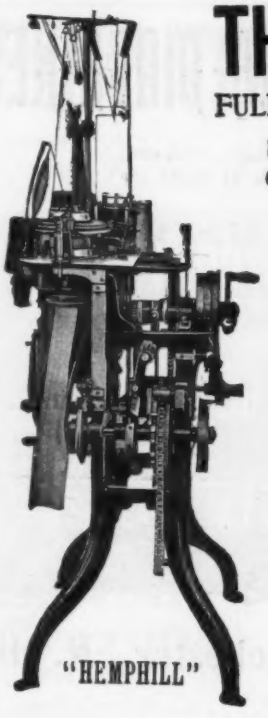
Complete Estimates Furnished. Send for Particulars.

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.



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THE TWO LEADERS

FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY

One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

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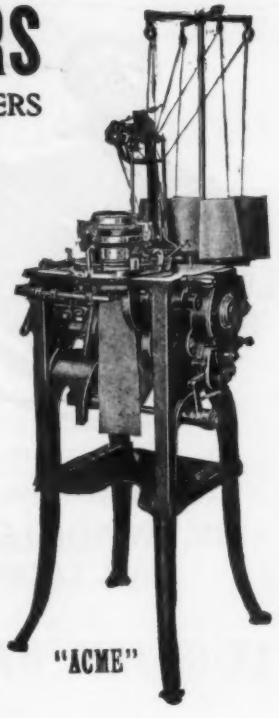

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EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

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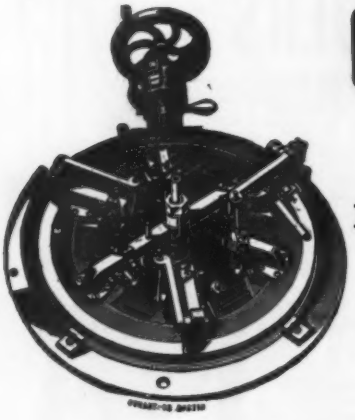
BUILDERS OF

Full Automatic Knitters

With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH



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Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

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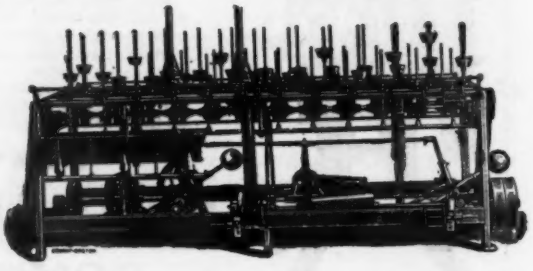
Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



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By Hosiery Manufacturers,
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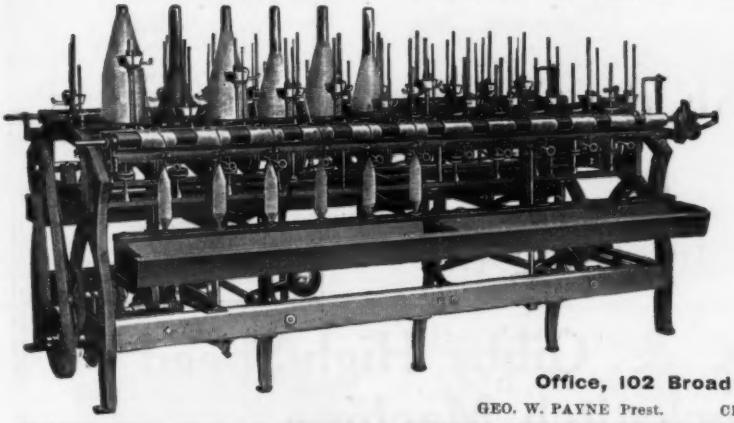

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To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

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Meet the requirements of any cotton, woolen or worsted mill.
May we send samples? 15 colors and white.
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Patentee and Sole Manufacturer of
THE PNEUMATIC CONVEYOR
For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.
SATISFACTION GUARANTEED. Patented Oct. 15, 1889.
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DECREASE the Cost and
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This Trade-mark is a recognized guarantee of
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Business Established 1859.

Willcox & Gibbs High-Speed Lockstitch Machine.

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AN INSTRUMENT OF PRECISION
3,500 to 4,000 Perfect Stitches Per Minute.

For Facing and Banding Knit Shirts and Drawers and for making up Muslin Underwear, Petticoats, Shirtwaists, Ladies' Belts, Millinery, Umbrellas, Shirts, Collars, Cuffs, etc.

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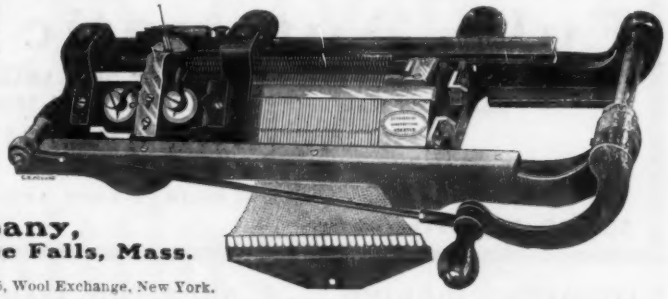
LEADER OF KNITTERS

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.



Circular Machines, Rib Top and Seaming Machines.

Lamb Knitting Machine Company,

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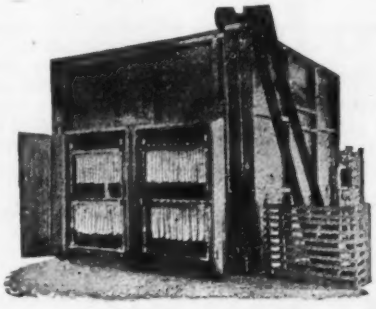
J. E. WOODHEAD, 100 22d St., Chicago.
L. D. SANBORN, Room 505, Wool Exchange, New York.



Bailey's Hot Air System of Yarn Drying has no equal

where large capacity is required. Leaves the yarn in fine condition for winding and weaving, makes little waste, is simple and very effective. My *cold air system* is unequalled where output is not *the* all important thing.

Write for particulars.

Dye Sticks, Dye Poles, Wood Rolls, Fans and Trucks.

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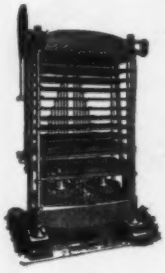

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The most reliable machine of the kind on the market.

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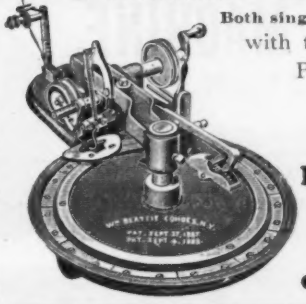

Both single and double Stitch.

with the
Patent Raised
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Straight Points.

Beattie Machine Works,

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Robinhold Machine Co.

Patentees and Manufacturers

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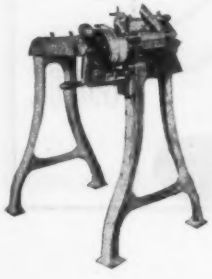

Practical Automatic

Power Top Cutting Machine

Will cut anything with a Welt

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Gilbert Wood Split Pulleys

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Full Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
RANGE ON HALF HOSE AND LADIES FROM 260 NEEDLES DOWN.

3-4 AUTOMATIC KNITTER

With Lace Effects.

Exclusive rights to BROWN'S LACE ATTACHMENT.

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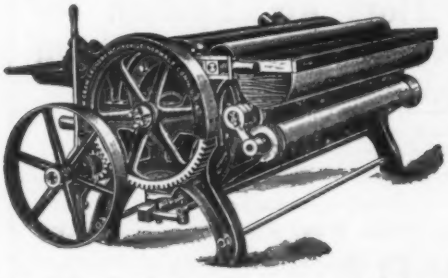
AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

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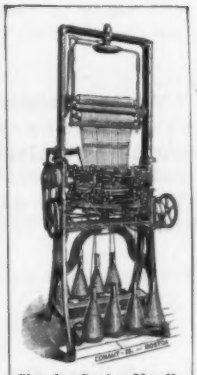

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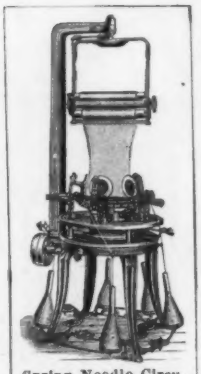
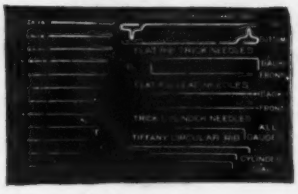
Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



Spring Needle Circular Plain Body Machine.

Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



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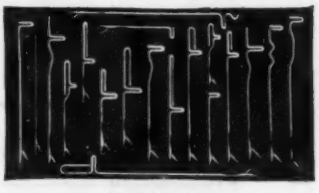
Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



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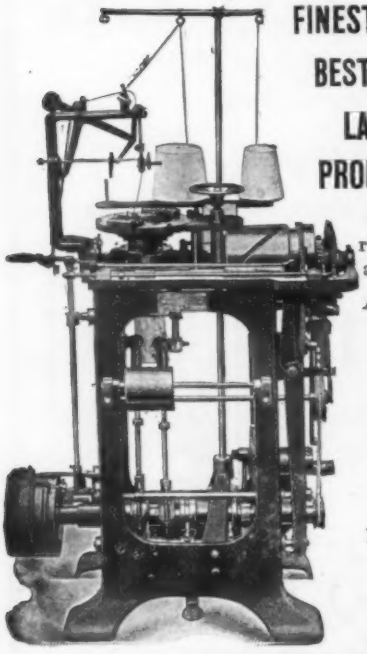

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Greatest Variety of Laces, and Novelties.

All automatic.

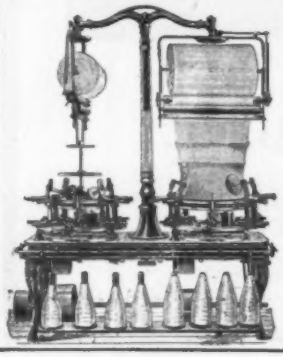
Lowest Cost for Operating

Also
Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

728 Cherry Street, PHILADELPHIA, PA.

The greatest profit for Underwear Manufacturers



is obtained by making their goods on

Our Spring Needle Machine

We are getting the orders because we have the machine that gives the largest production, most perfect work and greatest range. Our fine guage work is wonderful.

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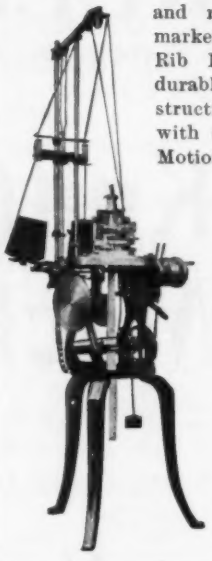
Ruth Rib Knitting Machinery is the latest



and most improved in the market to-day for any style of Rib Knit goods. They are durably built, simple in construction and easily operated with our Automatic Stop Motion.

We have attained the greatest production with the least menders and needle breakage over all other machines

Write for our liberal trial proposition

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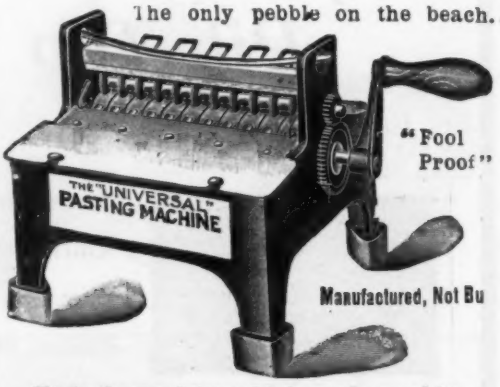
The only pebble on the beach.



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Universal Gummer

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Gums an ordinary shipping label or the finest surface-coated stock without injury. **Over 10,000 in use.** Can be made to drive from an electric-light socket; other styles and sizes furnished.

5-inch Roll, Hand-Power, $10.00.

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Hosiery Machines

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Investigate what *each make of machine will do*, in quality and quantity of product, the cost of repairs, length of life, etc. Such an investigation will show *you* why so many manufacturers

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It is good on the start—and *stays good*

Write for catalog and prices.

STANDARD MACHINE CO.

HOSIERY MACHINES. 508 Ludlow Street, Philadelphia, Pa.

Do you wish to make knit goods as perfect as the French or German, and as rapidly as the American?

Do you want to plait?

Do you want to knit worsted or silk?

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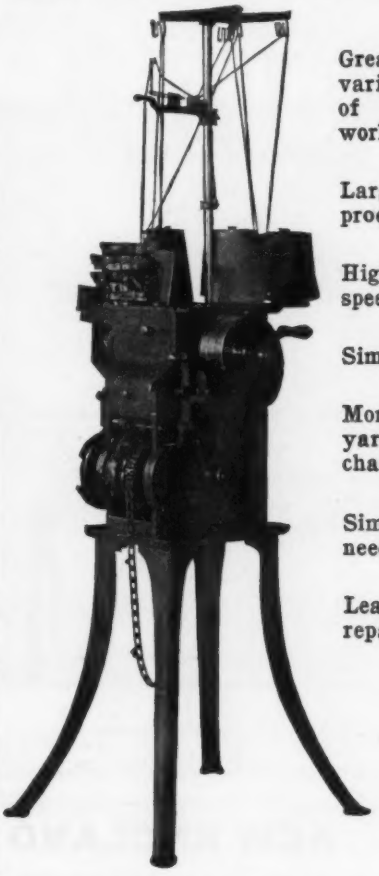
Hemphill's Latest

"The Banner"

FULL AUTOMATIC MACHINE.

Specially adapted to Platted Goods.



Greater variety of work

Largest production

Highest speed

Simplest

More yarn changes

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Least repairs

The wonder of the 20th Century

Manufactured by the

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Established 1870. — Incorporated 1890.

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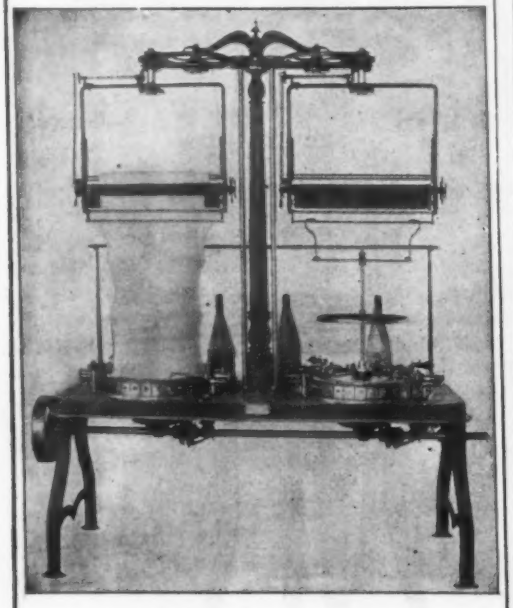
Spring and Latch Needle Machines for both rib and plain work, producing a great variety of fabrics. Patent removable hardened Wing Burr Wheels.



Spring Needle Underwear Machine.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
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KNIT FABRICS CUT TO LENGTH.

Our Knit Fabric Cutter

will cut from the roll, knit fabric into any length from 10″ to 40″ at the rate of 100 pieces a minute. The lengths are accurate, the waste is a minimum, the labor unskilled.

We also make a Slitter

for cutting these goods into narrow strips and rewinding same into rolls.

SAMUEL M. LANGSTON,
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ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

SOLID SASH AND CURTAIN CORDS,

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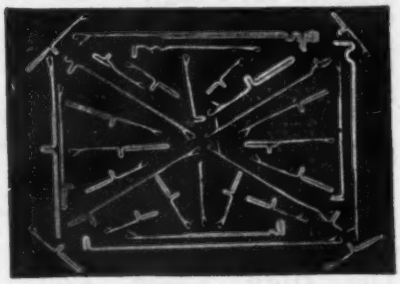
TRY OUR "SUPERIOR", OR SUNKEN RIVET-HEAD NEEDLES

They will save you money.



Dodge Needle Co., Manchester, N. H.

WM. COREY CO,

Manufacturers of Knitting Machine

Latch Needles

MANCHESTER, N. H.

EXCELSIOR NEEDLES.

The best Hosiery Needles in the market.

Manufactured by

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AND BURR BLADES OF ALL KINDS.

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Manufacturers of

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Standard Latch Needles

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EXCELSIOR NEEDLE CO.,

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The Largest Manufacturers of Machine Needles in the World.

Longer Wear. Better Work.
Less Mending. Fewer Seconds.
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C. Shawl, 414 Polk St., San Francisco, Cal.
J. C. Strittmatter, 2a Calle de San Francisco No. 9, City of Mexico, Mexico.

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Manufacturers of all kinds of

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MANUFACTURERS OF

LATCH NEEDLES

of all kinds. Warranted in every respect.

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Manufacturers' Supplies Co.

418 ARCH STREET, PHILA.

Needles and Supplies for Knitting Mills.

Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

The Continental Latch Needle Company.

Manufacturers of the BEST GERMAN NEEDLE on the Market.

RIVETS GUARANTEED. Samples on application. SPRING NEEDLES A SPECIALTY.

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4,000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.

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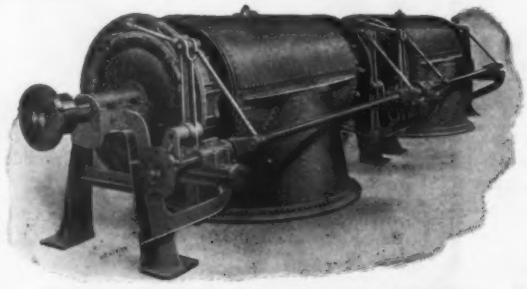

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The High Speed, Power, Efficiency and Durability of the

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ADAPT IT TO ALL CONDITIONS.

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The Dayton Globe Iron Works Co.
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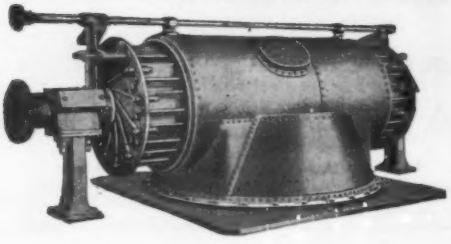

AN EVEN and REGULAR SPEED under all CHANGES of LOAD is always desirable. This condition combined with a QUICK SPEED and HIGH EFFICIENCY makes a combination hard to beat. The SAMSON maintains all these conditions under the most severe tests.

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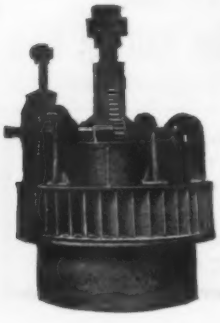
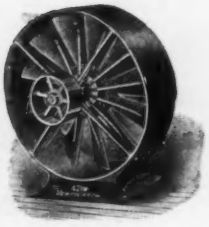


Risdon-Alcott Turbine Co.

MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE
LEVIATHAN HINGED GATE TURBINE
On Horizontal or Vertical Shafts.

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.



"ABC" Disc Ventilating Fans

make life liveable in hot work-rooms, offices and engine rooms by frequently changing and rapidly circulating the air. **Strong, Durable, Efficient.**

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The Mechanical Engineering Dept. of University of Michigan Has Made Exhaustive Tests of

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Their report confirms our claims of superiority.

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MECHANICAL HEATING, VENTILATING AND DRYING, MECHANICAL DRAFT FANS

ELECTRIC Propeller Fan.

12 inches to 12 feet.

Alternating and Direct Current.

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FOR TEXTILE MILLS

WE GUARANTEE RESULTS

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Portable and Electric.

Controls Night Watchman.

Allowance made for old clocks.

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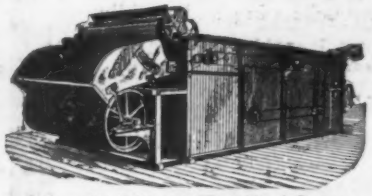
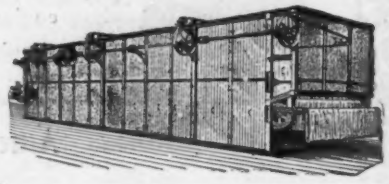
JUL 17 1907

"CYCLONE" DRYERS

For Cotton Stock, Wool Stock, Rags, Yarn, Cloth
Underwear, Stockings, etc.



Automatic Cotton or Wool Stock Dryer.



Automatic Yarn Dryer.

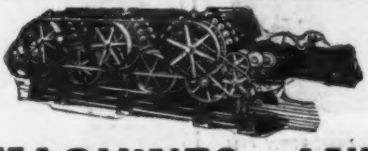
Steel Bladed Ventilating Fans.

Iron Bowl Yarn Scouring Machines.

Complete Carbonizing Outfits for Wool, Rags or Cloth.

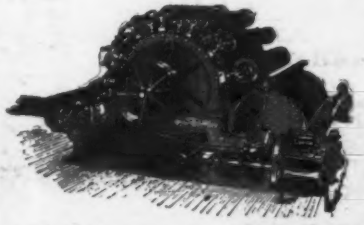
THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Streets, PHILADELPHIA, PA., U. S. A.

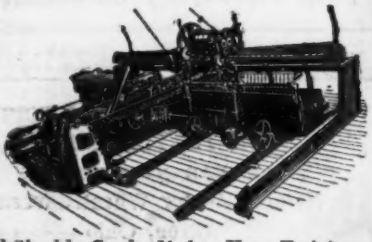


CARNETT MACHINES AND PICKERS

For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



WOOLEN MILL MACHINERY



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Complete Equipment for Manufacturing Cotton Batting for All Purposes.

Special Carding and Spinning Machinery for manufacturing Yarn from such low grade stock as Mill Sweepings, Linters, Etc.

We reclothe or furnish new Metallic Toothed Cylinders and Rolls and relagg or furnish new Cylinders for any make of Rag Picker.

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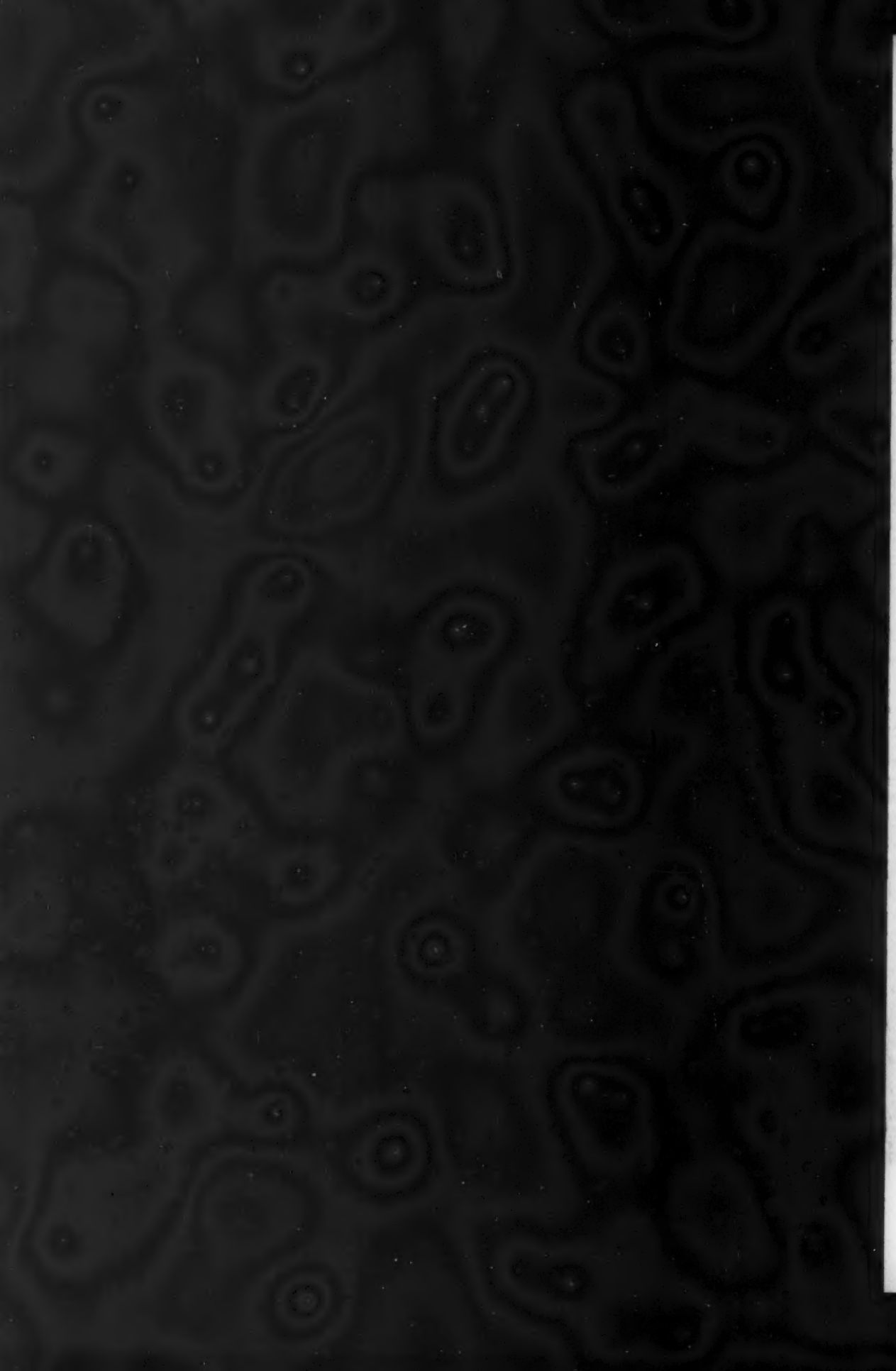

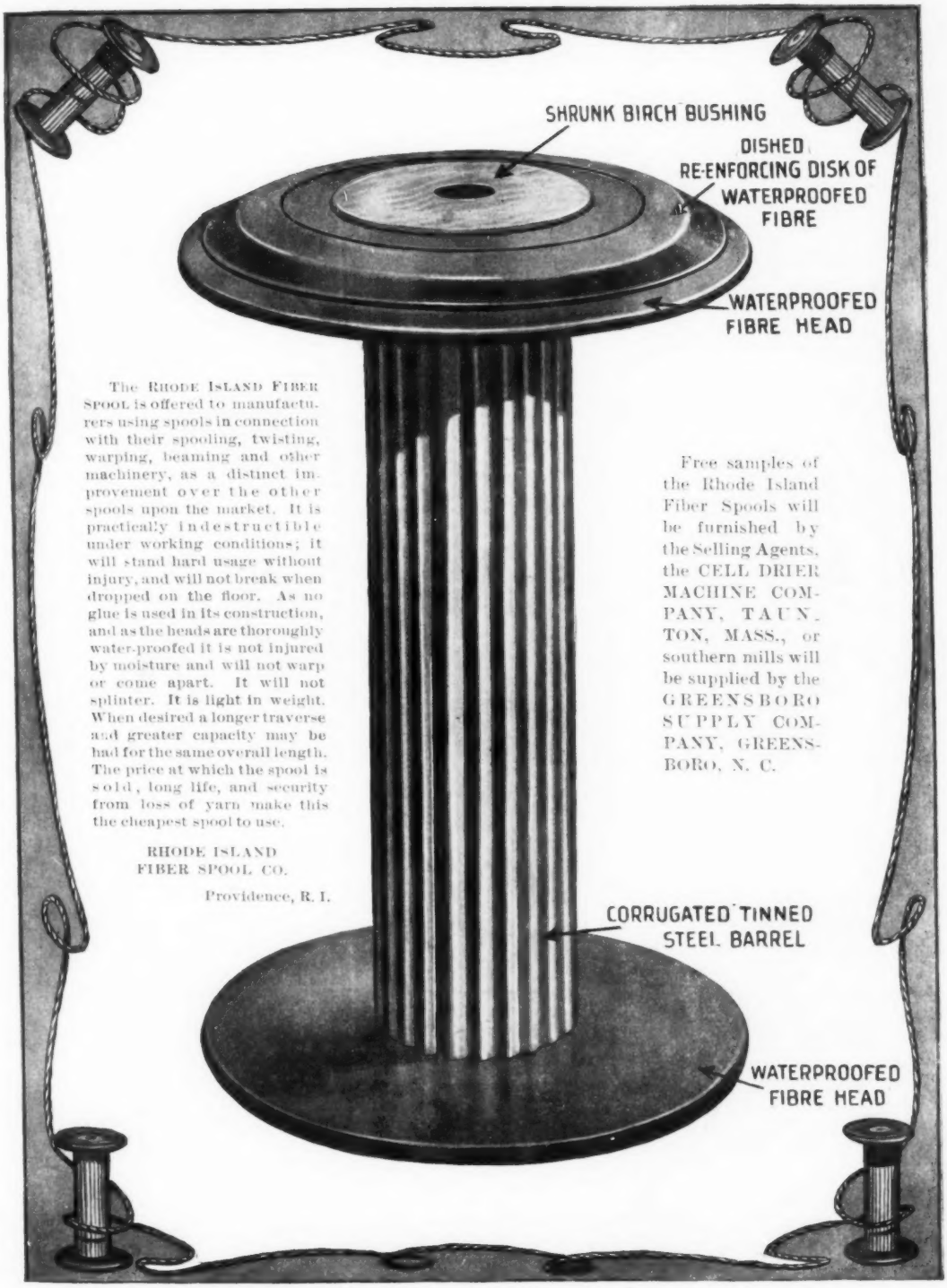

The RHODE ISLAND FIBER SPOOL is offered to manufacturers using spools in connection with their spooling, twisting, warping, beaming and other machinery, as a distinct improvement over the other spools upon the market. It is practically indestructible under working conditions; it will stand hard usage without injury, and will not break when dropped on the floor. As no glue is used in its construction, and as the heads are thoroughly water-proofed it is not injured by moisture and will not warp or come apart. It will not splinter. It is light in weight. When desired a longer traverse and greater capacity may be had for the same overall length. The price at which the spool is sold, long life, and security from loss of yarn make this the cheapest spool to use.

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FIBER SPOOL CO.

Providence, R. I.

Free samples of the Rhode Island Fiber Spools will be furnished by the Selling Agents, the CELL DRIER MACHINE COMPANY, TAUNTON, MASS., or southern mills will be supplied by the GREENSBORO SUPPLY COMPANY, GREENSBORO, N. C.

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WESTFIELD, MASS.

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CONE AND TUBE WINDERS

Both Close and Open wind.

Our Machines are in use in Cotton, Wool, Worsted, Silk and Linen Mills.

The FOSTER WIND CONE makes a Perfect Knitting Package.

"Sirocco" Propeller Fans

At equal speeds have 50% greater volumetric capacity than other makes of Propeller Fans. For equal duties show 15% saving in power.

Sirocco Engineering Co.,

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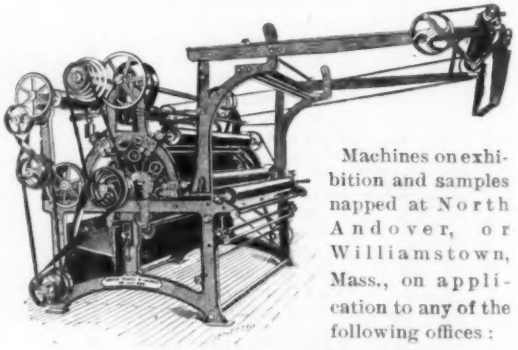
THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



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Builders and Selling Agents, North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston
H. H. HEAP, Treasurer and General Manager
WILLIAMSTOWN, MASS.

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CONVENTION SUPPLEMENT

TEXTILE WORLD RECORD

Vol. XXXIII **MAY, 1907** *No. 2.*

The Convention of the American Cotton Manufacturers' Association.

The largest gathering of manufacturers connected with any branch of the textile manufacturing industries ever assembled, met in Philadelphia for the eleventh convention of the American Cotton Manufacturers' Association on May 15th and 16th. There were probably 2,500 cotton manufacturers, commission merchants, yarn merchants, machinery builders and representatives of many diversified interests dependent on the great cotton manufacturing industry.

The great event of the meeting was of course the banquet on Thursday evening, at which the Vice President of the United States was the principal guest, but from Monday until Saturday there was not an hour in the day from nine o'clock in the morning until after midnight when the spacious corridors of the Bellevue-Stratford Hotel, which was the headquarters of the convention, was not thronged with delegates from all parts of the country, renewing old friendships and making new ones, discussing broad matters of general trade interests and special matters of particular interest in their own affairs.

The business sessions of the convention were well attended and many of the addresses were of a high order. The committee had wisely decided to have only two general sessions, and because of the long program some of the papers were read by title only. This kept the sessions within reasonable length, and held the members together better than if they had been too much prolonged.

With the exception of one day the weather was fair, and on Wednesday there was a real touch of summer. The favorable weather enabled the entertainment committee to carry out its program of sight seeing and out-of-door excursions with few interruptions, and the automobile parties and "Seeing Philadelphia" excursions were much enjoyed.

Upon registration each member received a very handsome gold badge, inscribed with his number, and was presented with a leather bound book, containing a list of all the members, and coupons for the various features which had been planned for their entertainment, as well as other matters of interest.

The afternoons were left free, and the majority of the members and guests were at the exhibition. This feature surpassed all expectations, and was generally conceded to be the best exhibition of cotton machinery that had ever been gathered together. The First Regiment Armory is well adapted for the purpose, and had been most attractively dec-

orated. The general color scheme was green and yellow. There was a unity of design, and yet an individuality of treatment by the different exhibitors, that was very pleasing.

Some of the exhibits were of improvements shown here for the first time, and the suggestions of the exhibition committee in charge, that exhibits should be limited so far as possible to new things and improvements, was an important reason for its great interest. A large proportion of the machinery was shown in operation, and the clatter of the loom and the noise of the machinery made the manufacturer feel at home the moment he stepped inside the hall.

There was a very general feeling of satisfaction on the part of the exhibitors as well as the manufacturers as to the exhibition feature. Not one exhibitor was heard to express himself in any but the most favorable terms, both as to the general interest and its direct business advantage to the exhibitors. There was a great deal of actual business done, many orders were placed, some very large ones, and it can truly be said that the exhibition justified itself from the standpoint of all concerned.

Friday was devoted to the exhibit and to sight-seeing, and in the afternoon a large party embarked for a steamboat excursion on the river, in connection with which one of the famous Washington Park shad dinners was enjoyed.

The formal proceedings of the convention began on Wednesday morning at about 11 o'clock. The convention was opened with prayer by the Rev. S. W. Dana, and President Lowe then introduced Mayor Reyburn of Philadelphia, who welcomed the visitors to the city, and assured them that it belonged to them. The reply to the address of welcome was made by the Hon. D. A. Tompkins of Charlotte, N. C. President Lowe then delivered his annual address, which was followed by the presentation to President Lowe, by Mr. R. M. Miller, in behalf of the association, of a massive silver punch bowl and cups, to retiring President Lowe, as a token of appreciation and regard for his work during the past year. Mr. Lowe responded gracefully, and also thanked the convention for the beautiful flowers which had been presented to Mrs. Lowe.

Then followed the papers prepared. There was no discussion of the papers read.

The afternoon was devoted to visiting the exhibition, and to automobile rides and side excursions. In the evening many members attended a theatre party at Keith's new theatre, which was tendered by the entertainment committee.

The session of Thursday was called to order promptly at 10 a. m. in the reception room of the ballroom suite. Before formally opening the session President Lowe invited President Hartshorn of the National Association of Cotton Manufacturers to pledge with him from the new punch bowl the health and prosperity of the two associations and their closer community of interests. Later on in the meeting Mr. Hartshorn, in a few graceful remarks, thanked the association for the welcome that it had given to him, and speaking along the lines of the much talked of union of the two associations, said that both were working along the same lines, and that there should be no sectional feeling and that whether separate or united both should be American and National.

Following the opening of the morning session an executive business meeting was held, and the reports of various committees listened to and other business transacted.

Secretary Bryant read a brief extract from his annual report. One of the most interesting features was that a gain of 477 members had been made since the last annual meeting, bringing the total membership up to 1,056. Of this number 522 live north of Washington, D. C., and 520 south of it, the balance of membership being composed of residents of foreign countries. This shows the truly representative national character of the association, with a membership so evenly divided between the two great manufacturing sections.

The special committee, which conferred with representatives of the New York Cotton Exchange yesterday, presented a report in which it said that the question of the establishment of a revised classification for the grading of cotton had been discussed, but owing to the fact that the representatives of the New Orleans Exchange, who had been invited to attend the conference, did not do so, no action was taken.

By unanimous consent the association adopted the following resolution, which was presented by L. M. Parker.

"The committee to whom was referred the memorial of certain cotton manufacturers of North and South Carolina, with reference to the question of transportation of cotton by railroads and the practice of issuing bills of lading for cotton in long anticipation of shipment, beg to say, that we have carefully considered this memorial, and think that the action suggested by the members in question is proper and should be adhered to by all manufacturers in the purchase of cotton during the coming season.

"The evil is certainly very great. During the past season it was constantly four months, and sometimes longer, before the cotton was received after it was paid for. The committee has information to the effect that bills of lading are constantly issued by railroad companies before the cotton has been delivered to them for transportation when it is in the hands of compress companies, warehouse companies, and even at times when it is in the hands of the consignor.

"The practice of issuing bills of lading under such circumstances cannot be too severely condemned, and it is more than probable that a railroad company, under such circumstances, is not even liable upon its bills of lading. We, therefore, recommend that spinners decline to honor drafts unless the bills of lading accompanying drafts specifically express car numbers showing that the cotton has been actually loaded into cars.

"We further recommend that a committee be appointed by this association to take this question up with the railroad companies and particularly to present the matter to the Interstate Commerce Commission, and, if necessary, to seek for legislative action from the Legislature of the various States, as well as from Congress."

The election of officers resulted in a choice of the following ticket:

President—S. B. Tanner, of North Carolina.

Vice President—T. H. Rennie, of South Carolina.

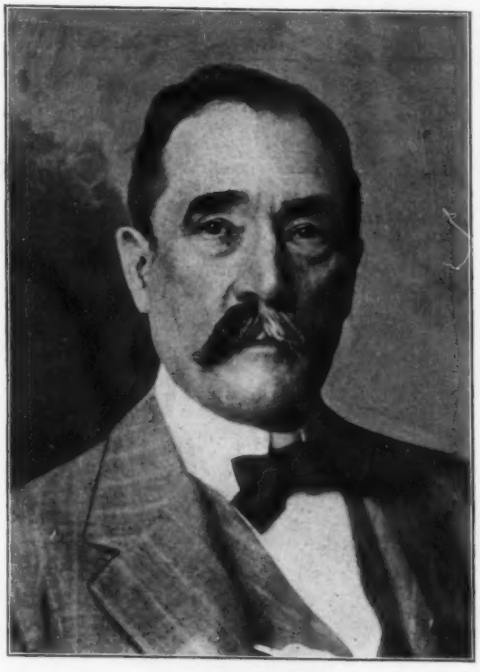
Secretary-Treasurer—C. B. Bryant, of North Carolina.

Chairman Board of Governors—T. Ashby Blythe, of Philadelphia.

Board of Governors—Ellison A. Smyth of South Carolina, Fred Flather of Massachusetts, B. Y. Cooper of North Carolina, Leonard Paulson of New York, E. Chappel of Georgia, M. M. McCall of Alabama.

Mr. Lowe, the retiring president, thanked the members for their co-operation during his term of office, and introduced Mr. Tanner, the new president, formerly first vice president, who in brief remarks thanked the members for the honor they conferred on him, and asked their co-operation in the work which he is about to take up for the coming year. While he had accepted the office reluctantly, he promised his best efforts, and was keenly appreciative of the responsibility and the honor.

The new vice president, Mr. T. H. Rennie, one of the most popular and widely known members of the association, was warmly welcome as he extended his thanks for the honor conferred upon him.



S. B. TANNER, THE NEW PRESIDENT OF THE ASSOCIATION.

Secretary Bryant, to whom so much of the success of the meeting is due, and whose efforts have been untiring for the past few months, expressed his appreciation of the continued confidence expressed by the members by his re-election.

The banquet on Thursday evening was referred to by several of the speakers as the largest and most imposing affair of its kind that had ever been held. The great ballroom

of the Bellevue-Stratford was filled with about 900 members and guests, and many disappointed visitors were unable to obtain tickets. The floral decorations were beautiful. The dinner was as well cooked and served to that great number as if it had been a small banquet to a score of people. The speaking was of a high order.

The music was inspiring and the audience frequently joined in the choruses of well known airs and "Dixie" and the "Star Spangled Banner" brought them to their feet with ringing cheers.

Col. P. H. Corr acted as toastmaster. The

T. H. RENNIE, THE NEW VICE-PRESIDENT.

speakers were President Arthur H. Lowe, Mayor Reyburn of Philadelphia, Lieutenant-Governor Murphy of Pennsylvania, Lieutenant-Governor Draper of Massachusetts, ex-Senator McLaurin of South Carolina, and Vice President of the United States Chas. W. Fairbanks.

The program for the evening was exquisitely engraved, having for a frontispiece a representation of the first cotton mill established in the United States, at Upper Beverly, taken from an old print at the time of Washington's visit, October 30, 1789. Each guest also found at his plate a beautifully engraved copy of the Declaration of Independence, decorated in the national colors. Another souvenir of the occasion was a little statuette which came with the ices, representing a typical Southern planter with his hands in his pockets and his hat cocked on the back of his head, and standing serenely and securely upon a bale of cotton. The banquet was complimentary to the American Cotton Manufacturers' Association by the allied trades of Philadelphia, New York and Boston.

Mayor Reyburn thanked the assembly for coming to Philadelphia, and spoke of its many advantages, not only as a convention city, but as a great business centre, and assured manufacturers of good treatment, whether they visit Philadelphia for personal pleasure or business profit.

Lieutenant Governor Murphy made a happy speech in which he declared that "Cotton is surely King today," and asserted that the United States produces not only the greatest cotton crop in the world, but the best business men in the universe.

Lieutenant-Governor Draper spoke in his dual capacity as an official of a great cotton manufacturing state, and a member of the association and one intimately connected with the cotton manufacturing business. He alluded to the great changes that had taken place for the better in the past twenty-five years, and touched on a number of interesting points. He received a royal welcome and made an eloquent address.

Senator McLaurin spoke at length on the resources of the South, and the future of that great section of the country. He prophesied for it as great a monopoly in manufacture fifty years from now as it now has in raw material. "Theodore Roosevelt," said he, "with his big stick, is doing this country service not second to any president who ever occupied the White House; checking on the one side the rapacious greed of capital, and on the other the unreasonable demands of organized labor."

Vice President Fairbanks spoke of the abundant prosperity of the present time and dwelt particularly on the fact that its foun-

dation stone is confidence. Once the confidence of business men is destroyed, and they feel uncertain as to the continuance of the policies and principles which have created prosperity, it vanishes almost at a breath.

"There never was an hour in our history when Americans had more cause to be optimistic than they have today. Prosperity is found in all industries and in all sections of the Republic. The industry in which you gentlemen are engaged is enjoying in full measure its share of the prosperity which is abroad in the land. The dominant desire is, of course, to increase it if possible, and at least maintain it unabated. This is not a subject which concerns yourselves alone, but the entire country, for a great industry such as yours is of nation-wide importance. Your prosperity and welfare mean the prosperity and welfare of many communities and of a very considerable portion of our population.

T. ASHBY BLYTHE, CHAIRMAN OF THE GENERAL EXECUTIVE COMMITTEE.

"China affords an inviting field for the product of your mills. Your share in it is now comparatively small, but in good time your exports to that country will undoubtedly be largely increased. Both the Orient and South America are inviting fields for many of the products of our country. Both are worthy of our utmost consideration.

"Mr. Blaine saw with clear vision the possibilities for the extension of our trade in South America. He brought the subject sharply to the attention of the country and Secretary Root has done a distinct public service in again bringing the matter forcibly to the attention of the country. The opportunities which we have too long neglected, European countries have cultivated to the utmost. We should not continue to disregard the great southern market which affords so inviting a prospect for the future extension of our trade."

No praise can be too great for the working members of the various committees, many of whom have given their whole time for several weeks preceding the convention, to the arrangements. To T. Ashby Blythe, chairman of the executive committee, and the mainspring of inspiration and enthusiasm, are due the thanks of every participant in the convention. To the work of the finance committee, headed by Leonard Paulson, the magnificent entertainment and the many different features were made possible in a most lavish manner. To W. H. Jackson, chairman of the banquet committee, fell the task of the arrangements for the most important single feature of the convention, and well was it carried out, with the cooperation of the managers of the Bellevue-Stratford, aided by their wonderful facilities for taking care of such a host of people. To Joseph H. Parvin, chairman of the guest committee, the thanks of the many guests of the association are due for the good care taken of them, and the many thoughtful acts performed for their comfort. Mr. Parvin was a host in himself, and seemed to be everywhere at once. The Vice President was under his special care, and under his escort made the rounds of the exhibition, and was entertained at luncheon by the committees. E. B. Bogardus, chairman of the entertainment committee, and also member of the banquet committee, was one of the most hard working men on the list. The various features arranged for the entertainment of the visitors were under his special charge, and their manifest pleasure was good evidence of the success of the labors of his committee.

The ladies' entertainment committee, of which Myles Hoffman was chairman, contributed in no little degree to the success of the meeting, and the sterner sex had no reason to feel that the ladies were neglected while they were attending to business matters.

The press committee, of which C. H. Clark

was chairman, had performed most of their duties before the convention. Their work was to bring it to the attention of the trade, and inform them of the importance of being present. The large and representative attendance, and the great interest shown, is good evidence that this work was well done.

One feature that impressed itself particularly on all the visitors, and the subject of much comment, was, that no matter how trying the circumstances, and how tired and hurried they might be by the press of the moment, everyone received from the hands of the committee a cordial greeting and the utmost courtesy. Philadelphia certainly never better deserved its claim of being the ideal convention city, and Philadelphians never showed greater hospitality than during the eleventh convention of the American Cotton Manufacturers' Association.

List of Members and Guests Present at the Banquet.

Participants—Members

Adamson, Chas.
Andrews, Garnett
Arnall, H. C.
Anderson, S. H.
Arrington, Jno. W.
Allsop, Thos.
Ashworth, Henry
Aldrich, E. H.
Andrews, Isaac
Atwood, H. C.
Armstrong, F. M.
Alexander, S. B., Jr.
Austin, S. Y.
Allen, L. I.
Allen, Paul H.
Armstrong, C. B.
Ashcraft, Erister
Blythe, T. Ashby
Bostwick, Henry A.
Bishop, Fred'k H.
Bogardus, E. B.
Bradlee, Arthur T.
Butterworth, James
Benjamin, E. L.
Barnhardt, E. C.
Bryant, C. B.
Broadhurst, F. K.
Bond, Chas.
Barron, J. R.
Black, E. F.
Bean, C. Enos
Bible, Howard W.
Bradley, Jos. J.
Brown, Clements A.
Burnett, H. C.
Battle, Lee H.
Bruce, C. E.
Bird, H. S.
Bidwell, C. B.
Blunt, Harry H.
Burns, Robt. I.
Beaty, J. H. M.
Bloch, Jules
Bennett, Fred S.
Brown, J. W.
Bunn, W. M.
Barber, J. W.
Brannan, S. N.
Brown, C. J.
Burbank, S. H.
Bechtel, S. B.
Bilbrough, Wm. H.
Burr, A. E.
Buzzell, A. O.
Barry, B. J.
Bradley, W. E.
Bumstead, J. Howard, Jr.
Brown, H. Martin
Battle, Dossey
Bromley, W. H.
Butterworth, Harry W.
Bigelow, A. H.
Born, John M., Jr.
Bromley, Jos. H., Jr.
Burke, J. W.
Bryant, Stanhope
Burgoyne, Sidney J.
Barlow, G. D.
Burrans, S.
Buck, Robt. E.
Bishop, Robt.
Bodge, J. P.
Bryant, Fred L.
Cooper, D. Y.
Cary, S. B.
Cardwell, D.
Chamberlain, F. H.
Clayton, H. L.
Clark, Henry C.
Crinkley, J. S.
Cox, W. F.
Carrick, O. A.
Crutchfield, W. G.
Comins, Frank B.
Craven, I. Fletcher
Clemence, E. N.
Cheswell, W. E.
Chapman, Robt.
CLappell, E.
Corr, Peter H.
Carter, Saml. A.
Crews, T. W.
Cramer, Stuart W.
Culver, Henry H.
Connor, T. E.
Creighton, Harold T.
Cutter, I. H.
Culver, Fred S.
Campbell, L. W.
Carpenter, L. A.
Conway, Jno. F.
Chisholm, T. L.
Corbett, John
Curran, J. M.
Crampton, A. J.
Clexton, T. J.
Carhart, Hamilton
Chapin, Geo. W.
Connett, Halsey
Carrier, W. H.
Cothran, I. S.
Conway, I. W.
Corbett, Wm. A.
Chipley, Dudley
Cluett, E. Harold
Cleveland, Jesse
Clark, C. H.
Collins, Fred, Jr.
Dexter, Henry C.
Day, N. B.
D'Olier, Franklin W.
Dobbins, B. J.
Dabbs, John L.
Davis, A. O.
DeLong, J. J.
Dillon, Fred. N.
Danker, Danl. I.
Davis, Chas. Warren
Duke, B. L.
DuVal, H. S.
Dawes, Robert
Dunning, W. D.
Dickson, Chas. H.
Draper, Geo. O.
Dunn, Geo. W.
Detwiler, Harvey A.
Dimond, Frank
Dixon, Ezra
Dowd, W. C.
Draper, A. O.
Dunlap, M. W.
Davis, Jeff
Detwiler, W. S.
D'Olier, James
Dunning, Chas. A.
Dommerich, Alex. L.
Dunnell, J. W.
Eddy, Jesse P.
Estlow, Grant
Elliott, W. O.
Erhard, Geo. P.
Elsas, Oscar
Evans, R. A.
Enloe, H.
Etherington, Burton
Edgerton, N. E.
Fleming, Arthur J.
Frank, J. E.
Fish, C. H.
Fries, John W.
Fewell, R. T.
Fite, Jno. E.
Foster, J. W.
Freeman, A. C.
Fuller, James T.
Finney, D. C.
Fairbanks, H. W.
Fearrington, W. E.
Friedberger, Simon
Fisher, H. E.
Farmer, E. K.
Flather, Frederick A.
Fox, L. W.
Fricke, Wilbur S.
Finley, S. G.
Fenton, F. E.
Fortune, P. D.
Glynn, Martin P.
Gilbert, R. K.
Gregory, James G.
Garsed, W. R.
Greenwood, Daniel R.
Graddick, F. C.
Gaither, C. P.
Gerry, Roland
Garland, H. P.
Gray, D. W.
Godfrey, R. E.
Guion, L. I.
Goff, Rufus B.
Garsed, Edw. T.
Gilkey, P. L.
Galey, W. T.
Gorton, Chas. H.
Garcia, S. O.
Grant, Geo. P., Jr.
Goodale, A. M.
Guillet, A. M.
Graves, Victor M.
Gillespie, T. A.
Green, C. A.
Hansen, Harold C.
Hoffman, Geo. F.
Hyde, Edw. S.
Hunt, Alfred S.
Howard, Edwin
Hoffman, B. J.
Hutchison, C. E.
Hutchison, A. C.
Hooker, K. R.
Herx, Chas. O.
Hathaway, Edgar F.
Hoadley, F. M.
Hopkins, Chas. L.
Halton, Thos.
Hodge, Wm. B.
Hackstaff, Fred'k Wm.
Hunt, C. A.
Hobbs, T. M.
Hiss, Geo. N.
Holloway, Walter E.
Hanes, P. H., Jr.
Harrison, W. C., Jr.
Harris, Geo. S.
Hewitt, W. A.
Hooper, Robt. P.
Harriss, Wm. H.
Harley, Henry M.
Houghton, L. T.
Hughes, J. C.
Hall, Wm. E.
Hobbs, W. H.
Hergert, C. J.
Hoffman, Miles P.
Hubbard, Henry C.
Hartsell, J. L.
Hall, E. A.
Handy, Forrest B.
Hayne, T. B.
Jacobs, M. R.
Jenckes, Joseph E.
Jenkins, E. W.
Jones, P. R.
Jackson, W. H.
Jamison, Jos. B.
Johnston, H. M.
Johnson, L. B.
Jennings, J. T.
Judge, John P.
Jillson, W. H.
Jennings, H. B.
Johann, Chas. S.
Jenckes, F. L.
Jones, Hugh McK.
Klipstein, A.
Knox, R. B.
Kaneer, J. W.
King, J. N.
Kershaw, Jno. W.
Kenney, F. B.
Kershaw, Nelson
Klipstein, E. C.
King, Wm. V.
Kennedy, J. D.
Krout, Geo. W.
Kendrick, W. M.
Kennedy, J. J.
Keeler, L. M.
Lowe, Arthur H.
Liddell, Vinton
Lindau, J. W.
Leak, J. P.
Lillard, T. J.
Lacey, H. B.
Lilly, H. W.
Lordly, A. C.
Lillie, Chas. W.
Luther, Chas. B.
Lowe, Harry H.
Lanier, Horace
Leak, W. C
Long, I. A.
Little, C. S.
Lang, F.
Lamb, Harvey F.
Lipscomb, T. J.
Lowe, Russell B.
Loomis, Lauris
Lincoln, S. T.
Ledbetter, H. D.
Landon, Elmer L.

Participants—Members

Lampton, L. L.
Longstreth, Wm. M.
Lovelace, E. H.
Lowry, H. H.
Lockwood, L. A.
Larrabee, John E.
Lewis, R. S.
Long, U. G.
Love, R. A.
Meister, Chas. A.
Murphy, T. H.
Miller, R. M., Jr.
Marrs, Paul J.
Moss, John D.
Morgan, A. B.
Meyer, Chas. A.
Mauney, W. A.
Martin, Fay H.
Mattes, L. T.
Miller, Walter G.
Moss, Fred'k
Miller, Jno. M., Jr.
Mansfield, Henry F.
Merrow, Edgar L.
Montgomery, J. R.
Morris, A. Saunders
Maurer, Jos. W.
Morrison, R. H.
Murphy, Louis Edward
Merrill, M. H.
Marston, Jno. P.
Moore, W. B.
Miller, Jos. B.
Mayes, J. H.
Miller, Brevard D.
Murphy, Wm. M.
Mackay, R. N.
Martin, W. D.
Moore, W. W.
Mebane, B. Frank
Marks, Wm. M.
Moore, Chas. B.
Moore, B. N.
Moody, C. H.
Milliron, A. L.
Mitchell, Jno. J., Jr.
Midgley, Herbert
Mcadows, Wm. R.
Matthews, J. P.
Mauney, D. H.
Meikleham, H. P.
Mitchell, C. M.
Miller, Stanley G.
Mole, A. B.
Mauney, D. R.
Mayes, J. H., Jr.
Mars, Chas. M.
Maxwell, Jas. H.
Marshall, F. P.
Munson, W. B.
Mahony, W. D.
Morningstar, Rufus J.
Moore, T. E.
McRae, J. P.
McRae, Lawrence
McLellon, A. W.
McLin, C. E.
McKinley, David H.
Marchant, M. L.
McCall, M. M.
MacWhinnie, A. A.
McCormick, Laurence
McLane, Wm. N.
McAllister, A. P.
McNeill, W. D.
McCarty, Geo. S.
McCloskey, Jno J.
McManus, Peter B., Jr.
MacManus, John
McLean, A. W.
McKenzie, Clarence
McCallum, L. W.
McBride, W. C.
McTaggart, David D.
McMurry, A. W.
McCormick, C. A.
Nelson, Hugh
North, Frank G.
Noone, A. W.
Nichols, W. G.
Oliver, Chas. K.
Paulson, Leonard
Parvin, Jos. H.
Patterson, S. F.
Powers, John P.
Pratt, W. B.
Patterson, Jno. L.
Plonk, J. C.
Pratt, T. W.
Perry, Frank B.
Pedrick, Wm.
Pegram, E. L.
Pleasants, J. S.
Paine, Sidney B.
Patterson, J. Sanford
Price, Theo. H.
Parker, Lewis W.
Pyle, Newlin W.
Price, F. Bowman
Pendleton, D. D.
Parker, B. H.
Poor, J. Harper
Peabody, D. W.
Plunkett, C. T.
Rakestraw, Fred A.
Rice, Bruce L.
Rankin, John C.
Rowe, D. P.
Rennie, T. H.
Ray, R. R.
Rhyne, A. P.
Rudisill, D. A.
Rice, Herbert W.
Rau, Albert
Robbins, Chas.
Ross, Baxter
Reid, Edward S.
Richards, M. V.
Rudderow, Morris W.
Robbins, O. A.
Robinson, W. C.
Randolph, Jas. G. F.
Roberts, G. F.
Ransom, H. L.
Rodman, Lee
Roberts, J. M.
Reibel, F.
Ramsdell, T. Ellis
Robinson, H. H.
Richardson, F. S.
Strouse, Theo. H.
St. Amant, Geo. W.
Sampson, Chas. E.
Salkeld, A. D.
Snyder, Frank A.
Spellisy, Wm. A.
Sproul, A. E.
Stigen, B. Anderson
Smith, S. Hampton
Smyth, Ellison A.
Staton, L. L.
Sanders, Wm. M.
Sjostrom, Ivar L.
Sanford, J. L.
Sanford, Arnold B.
Street, John F.
Smith, Jos. J.
St. Onge, Amasa
Spencer, Geo. R.
Shipp, T. A., Jr.
Straub, H. H.
Stiles, W. F.
Stevens, M. E.
Sasser, W. M.
Savercool, E. M.
Steel, George G.
Shuford, A. A.
Swartwout, W. R.
Strang, James
Steel, Phil. S.
Sharples, W. M.
Smith, I. C.
Steele, S. H.
Seebohm, H. C. A.
Scott, John F.
Stackhouse, W.
Scott, Albert L.
Sumner, W. H.
Smith, T. H.
Shedd, Edward W.
Search, Theodore C.
Sully, Daniel J.
Stevens, C. H.
Sawyer, F. McM.
Steele, S. S.
Sullivan, P. F.
Stroman, O. F.
Sturtevant, Wm. C.
Sharpe, J. A.
Smith, Geo. P.
Separk, J. H.
Spencer, Wilton H.
Tiedeman, Irvin B.
Tuley, Philip S.
Tucker, Frank S.
Tillar, W. T.
Thompson, C. P.
Tannahill, E. D.
Thacher, Frank W.
Tompkins, D. A.
Thomas, Wm. C.
Tanberg, G. E.
Thomas, R. L.
Tillinghast, Geo. E.
Tolhurst, F. H.
Thomson, R.
Thomas, J. H.
Turner, George C.
Taylor, Harry
Tuller, Chas. D.
Tanner, S. B.
Thompson, Malcolm C.
Taylor, H. W.
Taylor, Val
Thompson, W. J.
Tucker, Geo. E.
Tillman, T. W.
Terrell, T. V.
Tuley, E. J.
Thomas, Richard D.
Torrance, Frost
Vincent, T. P.
Vansant, John L.
Wilson, James L.
Washburn, A. H.
Wild, William H.
Wilson, Robert
White, W. W.
Wattles, Arthur P.
Widger, Samuel S.
Wilde, Fredk. A.
Watson, E. P.
Wild, Jno. B.
White, J. O.
Wray, Rush T.
Wilson, R. L.
Wilson, C. E.
Whittam, Wm., Jr.
Whitcomb, Wm. W.
Watts, Ridley
Webb, C. Edwin
Webb, Chas. J.
Watson, J. L.
Wood, T. Irving
Whitaker, J. D.
Worth, H. B.
Wallworth, J. F.
Wainwright, T. L.
Williamson, E. N.
Woodward, Wm. I.
Walker, Robt. J.
Webster, W. M.
Whitman, Wm.
White, J. J., Jr.
Whittam, Arthur
Wardlaw, Jos. G.
Ward, I. J.
Weld, Edward M.
Willingham, E. B.
Winn, D. James
Walker, L. G.
Whitworth, Herbert H.
Woodside, J. D.
White, F. C.
Whitney, G. I.
Walker, Thos. P.
Winston, Moses C.
Yount, Jno. P.
Zellers, Geo. E.
Zeckendorf, C.

Participants—Guests

Audenried, Hon. Chas. Y.
Austin, L. Richard
Adamson, J. Arthur
Adams, F. A.
Allen, D. V.
Bramhall, J.
Baily, Geo. W.
Baldi, C. C. A.
Bancroft, John
Bowman, Col. Wendell P.
Birch, Frank B.
Brinley, Chas. A.
Bromley, John
Brown, Everett H.
Burleson, Hon. A. S.
Buzby, A. C.
Brown, C. J.
Ballow, Harry J.
Barry, Thomas
Blum, Isaac
Baker, Thomas F.
Bond, Chas. H., Jr.
Browning, J. M.
Bell, John C.
Blythe, R. H.
Bramall, J. A.
Beatty, Robert
Bennett, Chas. E.
Beagary, John C.
Brown, Wilson H.
Baily, Fredk. L.
Baily, Chas. W.
Burke, Hon. John C.
Battle, G. Gordon
Bingham, Fred C.
Bryan, Dr. H. N.
Browning, Willis
Brinckerhoff, M. V. B.
H. W. Butterworth's guest
Clay, Hon. Henry
Culbert, Joseph
Cooper, Geo.
Cohn, Robt.
Clay, Thos. W.
Corr, James P.
Calwell, Chas. S.
Craig, W. O.
Craig, W. O., Jr.
Claflin, Waldo M.
Camp, H. P.
Frank B. Comins' guest
Frank B. Comins' guest
Chambers, Chas. H.
Cabell, Walter C.
Cormack, M. H.
Cummings, Thomas P.
Capel, A. E. W.
Draper, Hon. Eben S.
Dunnee, Edw. J.
D. J. Danker's guest
Dana, Rev. Stephen W.
Derry, D. J.
Donovan, William F.
Dwight, Dr. M. B.
Doyle, John B.
Elkins, Geo. W.
Elverson, Col. James, Jr.
English, A. L.
Fairbanks, Hon. Chas. W.
Fancourt, Walter F.
France, E. W.
Folwell, N. T.
Foulkrod, Hon. W. W.
Foulkrod, W. W., Jr.
Firth, William F.
Forest, Geo. De
Fowler, E. T.
Fassnacht, Wm. A.
Gillis, H. A.
Githens, Benj.
Gotschalk, E. H.
Grove, Geo. W.
Griffith, R. M.
Gordon, C. B.
Gregson, J. C.
Greer, S. J.
Hoffman, Geo. E.
Heston, Herbert, Jr.
Hall, M. C.
Hurd, Russell
Haskell, Edw. A.
Hill, C. F.
Hatch, F. E.
Harvey, L. B.
Hawes, W. B.
Hallett, Wm. Russell
Hartshorn, Wm. D.
Henderson, W. G.
Hahn, Theo. J.
Howard, A. H.
Huhn, Geo. A.
Hubbert, Harvey H.
Huey, Henry C.
Hooper, James
Howe, F. W.
Hamer, W. M.
Junkin, Jos. DeF.
Johnston, C. Brooks
Jessup, J. H.
Jennings, E. S.

Participants—Guests

Johnson, C. E.
Jones, A. A.
Kinsey, Hon. John L.
Knight, S. A.
Knowles, W. C.
Kriebel, Henry S.
Kittredge, Henry G.
Kineavy, Robert F.
Knight, Jesse A.
Kerr, W. M.
Kelly, N. B.
Keppelmann, A. J.
Lewis, R. E. L.
Leslie, J. C.
Lewis, W. H.
Lord, H. G.
Lewis, J. F.
Lake, W. F. S.
Law, Wm. A.
Lewis, A. M.
Lowe, Stephen C.
Lamb, James H.
Murphy, Hon. Robert S.
Maltby, A. E.
Marsh, A. R.
McGregor, James
Morris, Chas. E.
Mitchell, James E.
J. P. Marston's guest
Murphy, Chas. F.
Merritt, Arthur
Murphy, Edw. V.
Murphy, Jos. D., Jr.
Murphy, Thos. Edw.
Mellor, Norman
Mather, John B.
Morton, J. W., Jr.
Morris, Hugh
Muller, Lewis P.
Makepeace, C. R.
Mullineaux, Jos., Jr.
Mullineaux, Jos. 3rd
Mercer, David D.
McLaurin, Hon. John L.
McCoy, H. A.
McNeely, Geo. H.
McDonald, Mitchell
McCloskey, Wm. J.
McCreary, Hon. Geo. D.
McFadden, J. Franklin
Mitchell, Robt.
Nagle, Frank L.
Neff, Robt. W.
Orr, James W.
Penrose, Hon. Boies
Price, M. G.
Perham, H. C.
Postlethwaite, Col. E. T.
Packard, S. T.
Porter, Chas., Jr.
Pollock, James
Phillips, Chas. B.
S. T. Packard's guest
Patterson, H. S.
Pennal, E. C.
Reyburn, Hon. John E.
Rathbone, Arnold R.
Runyan, J. W.
Robertson, E. W.
Reeves, Francis B.
Rogers, Joseph P.
Raby, Thomas
Root, C. A.
Riddle, Samuel D.
Roosevelt, N. G.
Schoneman, Chas.
Sawtell, A. H.
Shanbacker, E. F.
Seaman, H. H.
Spohn, H. W.
Sharkey, James B.
Spencer, A. B.
Summerfield, C. W.
Sharp, H. U.
Slifer, Paul B.
Smith, Abbott P.
Stead, C. F.
Smith, Geo. H.
Smith, J. W.
Smith, W. H.
Stewart, James T.
Train, Hon. Arthur C.
Tomes, P. Austin
Turner, Wm. L.
Thompson, John S.
Thompson, Walter S.
Tily, Herbert J.
Taubel, Wm. F.
Tyson, L. D.
Van Valkenberg, F. A.
Wiedersheim, Col. Theo. E.
Waernicke, H. E.
Wolfenden, John Taylor
Wolfenden, John
Wells, Frank L.
Watson, Hon. E. J.
Wilson, W. P.
Wade, A. E.
Walmsley, H. E.
Winn, Thomas
White, Louis P.
White, Nelson
Willits, Merritt N.
Wycoff, A. D.
Wohl, Marcus
White, Oscar W.
Warlick, D. H.
Waterman, W. S.
Waterman, Geo. H.
Wentworth, P. C.

Convention Comments.

UNION OF COTTON ASSOCIATIONS.

The president of the American Cotton Manufacturers' Association joins the president of the National Association of Cotton Manufacturers in recommending a consolidation of these two organizations. In this they express the general sentiment of the cotton trade, which sees no advantage and many disadvantages in supporting two cotton manufacturing associations.

These presidential recommendations will undoubtedly crystallize the sentiment in favor of union and facilitate active measures to that end. The erroneous idea that either organization is swallowing the other should be discouraged. The trade wants one association. This can be best accomplished not by one absorbing the other, but by the two uniting to form one. There should be no false sentiment about the name of that one. It should bear the name "American."

OVERCONSUMPTION.

In his review of the state of the cotton trade, President Lowe calls attention to the most serious of existing ills, in the following words: "It is easier to make sales than to make deliveries." It is overconsumption, not overproduction, that is embarrassing the cotton trade. Whether this is indeed an ill may be open to question, but it is certainly one that neither employer nor employe is anxious to exchange for the companion of many past years, overproduction.

IMMIGRATION.

As a remedy for the labor scarcity that accompanies overconsumption, Mr. Lowe urged the trade to encourage immigration into the South. He called attention to the fact that out of every 650 immigrants into the country only 1 goes to the South, and added: "The future growth and magnitude of cotton manufacturing in the South will depend largely upon the number of immigrants that can be obtained for cotton mill work. The native American will drift to other industries." There is danger, however, in an indiscriminate application of this remedy. It is not necessary to go outside the South for proof of this. In encouraging immigration care should be taken to select those races and nationalities that will assimilate with the Southern whites. Only in this way will the remedy be better than the disease.

ATTRACTING LABOR.

President Lowe laid especial emphasis on the need of making work in cotton mills attractive in order to gain recruits to the ranks of the operatives. He said:

Good comparative wages must be paid, and manufacturers must do everything possible for the health, comfort and welfare of the employes.

That is the complete and only solution of the labor problem. Labor, like commodities, seeks the highest market. It is but three years ago that the cotton trade was suffering from a scarcity of cotton, approaching a famine. The remedy for that scarcity was found in raising the price of cotton. Higher prices stimulated production and today the mills are making larger profits manufacturing goods from 12-cent cotton than were formerly made from 6-cent cotton. And so it will be with labor. Higher wages, shorter hours and better conditions in and out of the mill will attract operatives from other States and other countries to the South, and the labor problem will be solved. One thing should not be forgotten: a scarcity of labor is better than a race issue.

EXPORT TRADE AND THE LABOR QUESTION.

Referring to the export trade in cotton goods Mr. Lowe said:

Before this country (the United States) can become a big factor in furnishing cotton goods in competition with England and European mills, in foreign countries, there will need be some solution of our labor question.

That statement is open to various constructions. If it means that we cannot hope to supply foreign countries with cotton goods while our labor supply is inadequate to supply our own people, it is the simplest of propositions. If it means that the supply of labor must be increased and wages reduced to the European level before we can compete with European mills in foreign markets, no one will dispute it. If, however, it means that it is desirable for American mills to obtain the power of competition by increasing the number of people seeking work until wages are reduced to the European level, there will be registered the most emphatic dissent. Foreign trade purchased by lowering wages is not worth having.

EMPLOYER AND EMPLOYES.

President Lowe's treatment of the labor question was in many respects broadminded and liberal. He advocated higher wages, greater protection against accidents and disease, improved facilities for education, and showed a spirit of genuine friendship for the worker. This commendable attitude was, however, marred by an erroneous view of the relations between the employer and employe, as shown by the following extracts:

It is the cotton manufacturer's business to clothe the people.
He must be the mainstay of his employes.
He must give them employment and wages.
He must have a care for their health, happiness, education, even religion.

In other words the manufacturer bears to his employes the relation of a father to his children. This is an error. The employer and employe occupy separate positions in the industrial organization designed to raise cotton and convert it into a form suitable for clothing. Each has his duties, responsibilities and rights, and each is indispensable to the work of production. As individuals each is in the business for what he can get out of it, one in the form of profits, the other in the form of wages. These necessary business relations of employer and employe are in no way inconsistent with the existence of mutual friendship, respect and earnest cooperation between the two. On the contrary, it is in the denial or attempted evasion of them that the danger of disagreement between employer and employe is met. The manufacturer is no more "the mainstay of the employe" than the employe is the mainstay of the manufacturer. The manufacturer "must give his employes employment" for the same reason that the employe must give his employer his services, that both may exist.

Humane motives prompt the employer to "have a care for the health, happiness and education of the employe;" they also prompt the employe to have a like care for the health, happiness and education of the employer. As for religion, the less one cares for that of the other the better.

It is important that the right view of their mutual relation be taken by both employer and employe. Then they can apply themselves to the work of producing goods at the lowest cost consistent with the American standard of living, and let that cost be paid by the man that wears the cotton shirt.

THE OUTLOOK.

President Lowe takes a rosy view of the prospects. He believes "there will be a steady demand for the production of the cotton mills for some time to come," and that "there is very little probability that foreign countries will furnish increased quantities of cotton manufactures for this country, if no change is made in the tariff. The American cotton employer and employe are in possession of the best market on earth. The former is receiving a fair profit for manufacturing; the latter is receiving wages far above the highest in foreign countries, and they are still advancing. Is it not a good time to stand pat and be thankful?

MOISTURE IN COTTON.

In his paper on "Proper Means of Identifying Cotton," R. G. Hitt of Atlanta, Ga., incidentally touched upon the variation of moisture in raw cotton. This is easily one of the most important problems that face the cotton trade. Mr. Hitt gave in his paper much information regarding existing abuses, information all the more valuable because it was obtained from personal experience in the handling of cotton. His paper indicates that while he realizes clearly the evils of present methods and the urgent need of improvement, he fails to understand the only complete remedy. Thus after advocating a law providing for weighing and tagging cotton at the gin, he adds:

> It might be contended that if no gains are to be allowed no losses should be allowed. A loss would show for itself. There is nothing to defend a loss, as there is nothing to justify a gain.

Whether a loss or a gain should be allowed on cotton depends altogether on what proportion of moisture is represented by the invoiced weight. Under normal conditions cotton contains an amount of moisture that varies under different conditions. This variation has made it necessary for the European trade to adopt a certain percentage (8 1/2 per cent.) of regain on the weight of absolutely dry cotton, as a standard by which cotton yarn should be sold. The actual condition of the yarn is determined by tests in a legally authorized conditioning house. The buyer pays for only 8 1/2 per cent. more than the absolutely dry weight. If the yarn contains more than the legal amount of moisture a deduction from the commercial weight is made. If, on the other hand, the moisture is found to be less than the legal amount, a corresponding addition is made to the actual weight. By this method both buyer and seller of cotton yarn in Europe understand that the invoiced weight represents 108 1/2 per cent. of the weight of absolutely dry cotton. Attempts have been made to adopt the same equitable system for raw cotton, but have failed because it has been impossible to get the moisture in American cotton standardized in the American market. The bales have been dumped on the shores of Europe with the order: Take it as it is or leave it, and the American monopoly has left the European without redress. It is in the South that a conditioning system for raw cotton must first be established. It is only by such a system that the evils Mr. Hitt points out can be remedied.

BRINGING PLANTER AND MANUFACTURER TOGETHER.

Closer business relations between planters and manufacturers were discussed by Congressman Burleson of Texas and S. C. Barrett, president of the Farmers' Union. Mr. Burleson made a dignified argument in favor of a fair price for cotton, made it clear that the Southern planter knows his rights and intends to maintain them, and laid emphasis on the planter's intention to ask no more than is just. Both speakers, however, indulged too much in generalities, to the almost complete neglect of practical suggestions. Mr. Barrett was by far the greater offender in this respect. When a man appears before the public as the representative of the Southern cotton planter to discuss the state of the cotton trade, he rests under a heavy responsibility to make helpful suggestions for the improvement of present conditions. Mr. Barrett failed completely in this respect. He strung together a lot of commonplaces and half-truths, interspersed with passages that would have been more in keeping with the editorials in the yellow press than with a meeting of practical cotton manufacturers. Take for example the fol-

lowing reference to the classification of cotton:

> For our own part in the South we are establishing cotton schools in which we are educating our children to understand the grades and classifications of cotton, and to know just as well good cotton when they see it as the fellow who sticks his murderous knife into our cotton bales and sends it mutilated and robbed of several pounds of its texture to the compressors and mills.

If Mr. Barrett supposes that cotton spinners will buy cotton based on the classification by graduates from cotton kindergarten schools scattered through the South a rude awakening is in store for him. For the grading and classification of cotton mature judgment, a knowledge of manufacturing requirements and years of experience are required. Instead of ranting about "murderous knives" it would be more to the point to show how cotton can be graded at the gin to satisfy the requirements of the buyer at the mill in Lancashire, New England and the South. The following extract from Mr. Barrett's address refers to warehousing:

> We are building warehouse depositories in which we will be able, without damage, to hold and store our cotton against the necessity of hasty sales, and against the damage of the weather, and to keep it there until it will command such a fair and reasonable price as we think the necessities of the world will justify.

And then he adds:

> We are making every preparation which reason and common sense can suggest to deal directly with you, and we are now so situated that we can do, and will do, what we say we will do.

Building cotton warehouses would alone effect a vast improvement by preventing the "country damage" of cotton, but it is far from being all that "reason and common sense can suggest" for direct dealings between planter and spinner. How is the buyer in Manchester, England, for example, to be guaranteed that the cotton bought in Galveston will be of the specified grade? How is the Englishman to know that the cotton does not contain an excessive amount of moisture? What financial guarantee is to be furnished that the seller will conform strictly to the terms of the contract? It sounds well for Mr. Barrett to say that "he is now so situated that he can do and will do what he says he will do," but business is business and the question for him to answer is, How will he do it?

He told the manufacturers at Philadelphia a lot of things that nobody denied. For example:

> We are getting in better shape financially than we have been since the war.
>
> We know that cotton properly cared for is currency all over the world.
>
> There is business sense to realize that it would be best for us (the planter and spinner) to get together.
>
> Heretofore the cotton grower has not received his share of the profit of his fields.
>
> He (the planter) knows his rights, and knowing dares maintain.
>
> We come to you honestly and frankly.

There is no need of emphasizing statements like the foregoing, which are axiomatic. Mr. Barrett, however, made two assertions at Philadelphia, that are as clearly wrong as those just quoted are right:

> The middleman is no longer a necessity. Let us get that splendid fact in our mind to stay.
>
> I have stated a clear proposition.

Mr. Barrett's proposition is anything but clear. Until the planter makes it so, the middleman will continue to do business at the same old stand.

PATENTS.

The paper on "Patents" by George Otis Draper was clear, concise, practical and entertaining, in fact a model for those who take part in written discussions on such occasions. The writer understood his subject and confined himself to it, with occasional accounts of humorous incidents, that illustrated the argument and formed an agreeable relief in considering a rather dry subject. It is to be regretted, however, that one so well acquainted with the patent question did not discuss the question of making the validity of a patent contingent on its being worked. This phase of the question is now the subject of proposed legislation in the British House of Commons, and is attracting increasing attention in this country. The many and important benefits to the country from the patent system have been so well demonstrated by experience as to place the principle beyond the need of defense. The general acceptance of the principle, however, has led to a neglect of certain defects in the

details of operation, the most important of which promises to become a live issue by reason of the agitation in Great Britain.

The grievance arises from the difference between the existing patent laws of different countries, which has in practice largely destroyed the protective principle of the statute.

The present patent system in the United States and Great Britain originated in the monopolies granted to the mediaeval guilds and to foreigners or others introducing new trades into the country. The object was protection to home industries, and this was maintained even when the patents covered inventions, and when in 1624 the power of the Crown to grant monopolies was limited and defined. Gradually the system has been developed to its present form, by which the exclusive right to manufacture and sell a patented article is granted to an inventor for a term of years, and this right exists whether the patent is worked or not.

In other countries, notably Germany, however, the Anglo-Saxon principle has not been adopted. Patents are granted by Germany, but the German patent law of 1891 contains this important provision:

> The patent can be withdrawn by the patent office after the expiration of three years from the day of publication of the allowance of the patent:
> 1. If the owner of the patent shall omit to work the invention to an adequate extent in this country (Germany) or, at all events, to do all that is necessary to secure such working.

This clause in the German law and its absence from the American and British statutes has this result: A German patents his invention in Germany, Great Britain and the United States. He is forced to manufacture his patented product in Germany to retain the patent. He then exports the product to Great Britain and the United States, where the law prohibits everyone from manufacturing it, except the patentee. In this way the British and American patents stifle British-American industry and indirectly protect the German industry. Note the effect on the tariff. With free competition to make and sell at home the foreigner pays the protective tariff tax to reach our market. With competition forbidden by the patent law the domestic consumer pays the tax. The development of the German chemical and color industry and the dependence of Great Britain and the United States on Germany for chemical and color products is a striking illustration of this phase of the patent and tariff questions.

Our patent law intended as a protection to the domestic producer has by the limiting clause in the German law become a means of stifling the home industry and protecting the foreign manufacturer. The British Parliament is threatening to end this great wrong as far as it affects Great Britain. How long is it to continue in the United States?

We hope that Mr. Draper will take an early opportunity to state his views on this international phase of the patent question.

COTTON EXCHANGE METHODS.

The discussion of the New York Cotton Exchange methods by Theodore H. Price was especially important, as it dealt with an important phase of a question that affects the cotton trade of the whole world. The methods of cotton exchanges rank with bad baling among the greatest wastes and burdens in the cotton trade. The reform of these methods has heretofore seemed hopeless in view of the power and intrenched position of the exchanges. Nowhere has the burden of these abuses been heavier than in Europe, and, it may be added, nowhere has a reform appeared less hopeful. It is not many months ago that the spinners of Lancashire asked the managers of the Liverpool Exchange for a conference to discuss a change of the cotton contract. The arrogant reply from Liverpool was: "We hold the scales of justice between buyer and seller, and cannot vary our methods to suit either party." And in the face of this refusal the English spinners had no redress. Whatever else may be said of her methods, one thing is certain, the goddess of justice on the Liverpool Cotton Exchange is blind to the abuses of the exchange system. It is to this world-wide tyranny of the cotton exchange and to the probability that reform in America will be followed by reform in Europe, that the present contest with the New York Exchange owes its great importance. Regardless of

the merits of Mr. Price's dispute with that Exchange there will be few who will deny that the plea of the Exchange in court is calculated to impair confidence in it on the part of the trade. This plea is that the dealings on the New York Exchange are between its members and that outsiders have no right to question its methods. It thus joins the Liverpool Exchange in placing itself above and beyond the influence of the trade it is supposed to serve. Such an attitude on the part of cotton exchanges is better calculated to bring about a reform of their methods than anything their opponents could do.

A VIEW IN THE COTTON MACHINERY EXHIBITION.

COST FINDING.

The prominence given to methods of estimating the mill cost of hosiery at the Philadelphia meeting was fully warranted by the importance of the subject. The efforts of the hosiery association to make every manufacturer of hosiery able to determine the cost of his product should be extended to every branch of the textile trade. It is a subject in which each manufacturer is vitally interested. Each is willing to receive information, but it is the rare exception to find one willing to impart what information he has, to others. Yet it is nearly as important to a manufacturer that his competitors should know how to estimate cost as that he should himself know.

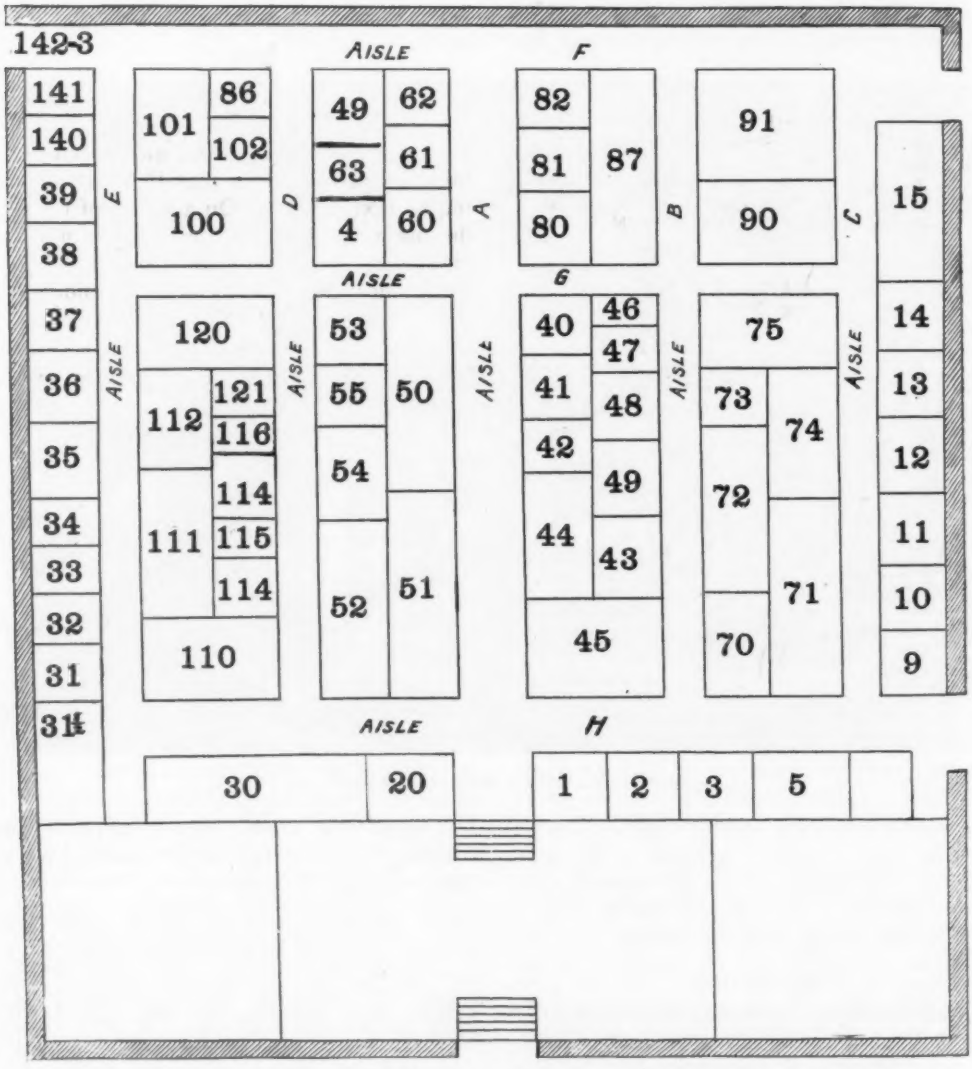
In 1906 the United States imported 49 million pounds of Egyptian cotton valued at eight millions of dollars.

For the nine months ending with September, 1906, the United States exported to China 6,882,504 pieces of cotton goods, consisting of sheetings, shirtings, drills and jeans.

In 1906 the United States imported cotton goods to the value, in round numbers, of 12 millions of dollars. In addition to this there were clothing at 3 millions; knit goods at 8 millions; laces at 37 millions.

The Cotton Machinery Exhibition.

1. Bell Pure Air & Cooling Co., New York City.
2. Cotton Publishing Co., Atlanta, Ga.
3. Arguto Oilless Bearing Co., Wayne Junction, Phila.
11. Otto Guetze, New York City.
12. Casualty Company of America, New York City.
13. Goulds Mfg. Co., Seneca Falls, N. Y.



PLAN OF THE EXHIBIT.

4. Wm. Mann Co., Philadelphia.
5. Keystone Telephone Co., Philadelphia.
9. Keystone Lubricating Co., Philadelphia.
10. Philadelphia Lubricator & Mfg. Co., Philadelphia.
14. Lord & Nagle Co., Boston, Mass.
15. Westinghouse Electric & Mfg. Co., Pittsburg, Pa.
20. Textile Manufacturers' Journal, New York City.

30. General Electric Co., Schenectady, N. Y.
31. A. Klipstein & Co., New York City.
31½. Addressograph Co., New York City.
32. Morris & Co., Groveville, N. J.
33. Macrodi Fibre Co., Woonsocket, R. I.
34. Brown-St. Onge Co., Providence, R. I.
35. T. C. Entwistle Co., Lowell, Mass.
36. Textile Machinery Co., Boston, Mass.
37. National Brake & Clutch Co., Boston, Mass.
38. Chas. Bond, Philadelphia.
39. American Moistening Co., Boston, Mass.
40. Lowell Machine Shop, Lowell, Mass.
41. Schaum & Uhlinger, Philadelphia.
42. Philadelphia Drying Machine Co., Philadelphia.
44. H. W. Butterworth & Sons Co., Philadelphia.
45. J. E. Rhoades & Sons, Philadelphia.
46. Cling-Surface Co., Buffalo, N. Y.
47. Robt. Schaellibaum Co., Providence, R. I.
48. Howard Bros. Mfg. Co., Worcester, Mass.
49. Tolhurst Machine Works, Troy, N. Y.
50. American Warp Drawing Mach. Co., Boston, Mass.
51. Coldwell, Gildard Co., Fall River, Mass.
52. Textile Finishing Machine Co., Providence, R. I.
53. Bell Telephone Co., Philadelphia.
54. Clayton & Bentley Co., Atlanta, Ga.
55. Garner & Co., N. Y. City.
60. Universal Winding Co., Boston, Mass.
61. Jones & Laughlin Steel Co., Pittsburg, Pa.
62. Foster Machine Co., Westfield, Mass.
63. West Disinfecting Co.
70. E. F. Houghton & Co., Philadelphia.
71. Mason Machine Works, Taunton, Mass.
72. S. F. Bowser & Co., Fort Wayne, Ind.
73. W. C. Robinson & Son Co., Baltimore, Md.
75. Thomas Halton's Sons, Philadelphia.
80. U. S. Gutta Percha Paint Co., Providence, R. I.
81. Jas. H. Billington Co., Philadelphia.
82. American Pulley Co., Philadelphia.
86. Holyoke Machine Co., Worcester, Mass.
87. Kip-Armstrong Co., Pawtucket, R. I.
90. Wm. Sellers & Co., Inc., Philadelphia.
91. Strawbridge & Clothier.
100. Draper Co., Hopedale, Mass.
101. Haskell-Dawes Machine Co., Boston, Mass.
102. Easton & Burnham Machine Co., Pawtucket, R. I.
110. Stafford Co., Readville, Mass.
111. John Hetherington & Sons, Ltd., Stephen C. Lowe, Agent, Boston, Mass.
112. Blaisdell Machinery Co., Bradford, Pa.
114. American Luxfer Prism Co., Chicago, Ill.
115. International Sprinkler Co., Philadelphia.
116. National Export Assn. of Manufacturers, New York City.
120. Kilburn, Lincoln Co., Fall River, Mass.
121. Frank Toomey, Philadelphia.
140. Adam Cook's Sons, New York City.
141. Western Electric Co., Philadelphia.

Special Location:

Luce Compress & Cotton Co., Magnolia, Miss.
Economy Engineering Co.
Translucent Fabric Co.
Edw. Libby.
H. C. Lancaster & Wm. Gordon.

The Draper Co., Hopedale, Mass., had in operation a complete running Northrop loom, a duplicate of several hundred now in operation at the Whitman mills. This loom was weaving fine goods with cop filling and feeler attachment. They also had a full line of their spindles, loom temples, spinning rings, bobbins, etc.

The Jones & Laughlin Steel Co., Pittsburg, Pa., confined their exhibit to power transmission machinery.

The Bell Pure Air and Cooling Co., New York, showed one of the motor-drive Bell humidifying machines that they are supplying to textile mills. On account of the conditions in the exhibition hall it was not possible to make a demonstration of its efficiency in the maintenance of humidity, but the operation of the machine was explained.

The Foster Machine Company of Westfield made a live exhibit, showing their latest improved model cone winder in operation. This is the first time that it has been publicly exhibited. The increased taper cone and the other improvements, all tending towards simplicity and perfection of operation, show that the Foster Machine Company is not content to "let well enough alone," but constantly keep their machines abreast of the requirements of manufacturers. They also showed their tube winder in operation.

The Southern Spindle & Flyer Co., Charlotte, N. C., was one of the few exhibitors from the Southern States. The exhibit consisted of a full line of Pressers neatly mounted showing the different stages from the black or forging process up to the finished article and illustrating the care required in their manufacture.

The Rickettson stop-motion was one of the new things that attracted much attention. It has been in operation for some time past at the Merchants Mill in Fall River, but this is the first time it has been publicly exhibited. The Easton & Burnham Machine Co. has recently made arrangements to handle this stop-motion. Special features are that it requires but a single row of drop wires; the lease rods instead of being held rigid can

vibrate as in an ordinary loom without the stop-motion, thus giving freedom from tension and strain on the yarn. The shape of the electrode is such that the lint and dust do not collect on the wires; the circuit breaker is simple, very slight electric current is required, only 3 volts, and this only when drop wire closes the circuit. Immediately after the loom stops it automatically shuts off the current.

The Mason Machine Works, Taunton, Mass., had a most advantageously located space and had intended to show a new model ring frame, but unfortunately the head was so badly broken in transportation as to be impossible to repair, several fragments being lost in transit.

The Kip-Armstrong Co. showed the K-A Electrical Warp Stop-Motion in operation applied to a Crompton & Knowles fancy loom, 18 harness, medium sley, 2 electrodes; also applied to Whitin plain loom, 4 harness, high sley, 4 electrodes. The looms were driven with Westinghouse direct drive motor. This exhibit was constantly surrounded by interested visitors and the attendants were kept busy explaining the simple and positive operation of the stop-motion, which has been previously described in these columns.

Garner & Co. of New York showed a new process of singeing yarns by electricity. The yarn is passed through platinum tubes, the degree of heat is accurately controlled and product is excellent. Gassing yarns is much more widely employed abroad than in this country, but it is expected the demand for fine goods will soon require greater demand for machines of this character in this country.

The Universal Winding Co. showed their No. 50 model winding machine winding the new increased taper cone for the knitting trade. This feature was very generally commended and the special points of the No. 50 machine were explained by practical demonstrators and a further demonstration was given in the Scott & Williams exhibit where a body machine was knitting yarn spun by the National Spinning Co., Lumberton, N. C., and wound on increased taper cones from the Universal machine.

The Addressograph Company had an exhibit especially adapted to show the advantages of their system in textile mills, especially for the time department, rendering it unnecessary to write and rewrite the names of employes, stockholders, customer's lists, etc. Mr. Dorsey, the manager, reported a number of sales to manufacturers who were impressed with the advantages of this system.

Theodore H. Strouse & Co., importers and commission merchants of mercerized and plain cotton yarns, exhibited a case filled with yarn on cops, cones, etc. Their main office is at 426 Market Street, Philadelphia.

Chas. Bond, Philadelphia, had a very creditable display of mill supplies and devices of various kinds which attracted a good deal of attention.

The manufacturers of Wyandotte textile soda, the J. B. Ford Co., Wyandotte, Mich., were represented by the president of the company, John F. McWhirter, and Fred H. Greene, their New England agent. Their display consisted of Wyandotte cigars and Indian stickpins, which were presented to visitors as souvenirs of the occasion and a reminder of the excellence of Wyandotte textile soda.

The H. W. Butterworth Sons Co., Philadelphia, exhibited one of their nine-cylinder warp dryers for two warps and a three-roll calender. Their representative was kept busy explaining the features of these machines to interested visitors.

The exhibit of the Wm. C. Robinson & Son Co., Philadelphia, consisted of lubricating oils and greases for textile mills, also "Autoline," an automobile oil. The exhibit was under the management of the Philadelphia branch of the company, Stanley W. Rusk, manager.

The exhibit of Thos. Halton's Sons consisted of five jacquard machines representing types of jacquard machines used in the manufacture of fancy silks, light weight fabrics, worsted and woolen dress goods, upholstery

goods, art squares, hammocks, cotton damasks, etc.

The American Warp-Drawing Machine Co., Boston, Mass., had a working exhibit of three types of their warp drawing machines; one a plain machine for drawing 2 harness work only, another for drawing any number of harness up to six, and the third a new model just completed and designed to handle the Draper steel harness and reed.

The merits of Albany grease were demonstrated in the booth of Adam Cook's Sons, New York, also their various styles of grease cups. The Albany spindle cup they claim to be the most economical and effective grease cup on the market.

The Stafford Co., Readville, Mass., showed two of their "ideal" automatic looms, one of them a 64-inch loom making plain sheetings, and the other a 40-inch loom with a Stafford 20-harness dobby making a line of light fancy goods. The feature of this loom that attracted particular attention was that when the filling run out the shuttle was changed instead of the bobbin, as is usual in automatic looms. Both these looms were equipped with mechanical stop motions and "Peerless" lease rods and driven by Westinghouse motors.

The exhibit of the American Moistening Co., Boston, consisted of a working system of their humidifiers and showed the various types of apparatus they build for humidifying and dampening. They gave to their visitors a handsome pocket pencil as a souvenir. So many of the visitors were customers of theirs that their space was constantly thronged by their friends.

S. F. Bowser & Co., Fort Wayne, Ind., showed a complete line of their long distance oil storage equipment by which oil may be stored at any distance away from the mill and the oil pumps located wherever the oil is needed. By their self-measuring pump any quantity of oil desired may be delivered at a stroke and accurately recorded by a meter. They also showed five different types of adjustable measure oil cabinets, a wheel tank for lubricating oils and other of their devices to be used in connection with them.

Easton & Burnham Machine Co., Pawtucket, R. I., had an interesting exhibit of a Kilburn & Lincoln loom with an electric warp stop motion, a cross winder, and samples of their line of twisting and spinning spindles.

The exhibit of the Cling-Surface Co., Buffalo, N. Y., demonstrated the relative efficiency of belts treated with Cling-Surface and those not so treated, showing the condition of the belts and the value of this treatment in textile mills by which the friction load is greatly reduced and economy maintained in belts, oil fuel, etc., as well as increasing the power of the machine.

The Brown-St. Onge Co., Providence, R. I., were showing their adjustable grids, which they guaranteed to give at least 10 per cent. better work than any other system of cleaning, and also their patent guard to prevent split laps. They distributed a handsome souvenir in the shape of a monogram watch fob.

A very interesting exhibit was that of the Dunn flyer of The Textile Machinery Co., Boston. In this flyer a new principle of construction is involved which results in many advantages from its use. Mr. Hallett and Mr. Martin were in attendance. The flyer is now doing good work in a number of mills.

The T. C. Entwistle Co., Lowell, Mass., exhibited one of their standard traverse wheel card grinders, a long roll card grinder and several of their open box expansion combs.

John Hetherington & Sons, of Manchester, England, for whom Stephen C. Lowe of Boston is the American agent, had a Nasmith patent six-head comber in operation, making a special feature of combing both long and short staple cotton. Over 1,000 of these combers have been sold.

Another "live" exhibit was that of the Coldwell-Gildard Co., of Fall River, Mass., who had one of the latest 40-inch Mason looms in operation daily. The loom was equipped with their well-known electric stop motion and was working with a warp of 60s yarn and 96 sley.

Morris & Co., Groveville, N. J., exhibited various styles of their duck mill baskets and steel corner trucks. One of their baskets, the "Morris Steel Corner Basket," was exhibited to the trade for the first time and promises to meet all the requirements that can be demanded of a strong and serviceable mill basket at a moderate price.

Macrodi Fibre Co., Woonsocket, R. I., had a complete line of the various fibre head spools manufactured by them, including warper and shipper spools. They stated that over 75 per cent. of their business is in the nature of repeat orders.

Another interesting exhibit was that of the Haskell-Dawes Machine Co., Boston, who had one of their latest improved 20-spindle twisting frames in operation, demonstrating a new principle in the production of strands by twisting.

Howard Bros. Mfg. Co., Worcester, Mass., had a most interesting exhibit of card clothing, German and domestic heddles consisting of the heaviest, the longest and the finest sizes of wire, ranging from 16 to 36 twin wire, and hand cards of every description, arranged for stripping and napping all classes of goods.

The Kilburn, Lincoln Co., Fall River, Mass., showed one of their new improved Patten dobby heads of the Stafford type. This firm is about to bring out six different models of looms for silk and cotton goods.

The National Brake & Clutch Co., Boston, Mass., with the Standard Brake Co., showed the cork insert devices manufactured by them. Fifteen hundred looms of the Wood Worsted Company are supplied with their cork insert loom clutch. They also showed various types of automobile clutches and brakes and several types of pulleys fitted with these inserts.

Lowell Machine Shop, Lowell, Mass., had one of their Camless winders in operation during the entire week. One of the features demonstrated in this exhibit was the high character of the product of this winder, every cone wound being exactly like every other cone. The Camless increased taper cone has been a great factor in its success, 14,448 spindles having been sold in 3 years.

A 45-inch 250 pound Cohnen centrifugal dyeing machine was exhibited by A. Klipstein & Co., of New York. This machine is adapted for raw stock, cones, cops, slivers, etc., and is claimed to be the only dyeing machine known by which indigo can be dyed on raw cotton.

The Tolhurst Machine Works, Troy, N. Y., had a working exhibit of their hydro-extractor operated by electric motor. The machine was run several pounds out of balance to illustrate the self-balancing feature. They also had a small model of the machine at their booth to enable those interested to become familiar with the working parts.

The Rob Schaellibaum Co., Providence, R. I., exhibited the Schaellibaum patent grid and Culvert's banding machine. This grid has been before the textile trade of Europe and America for many years and its sales are constantly increasing. The Culver banding machine will make 270 bands an hour and is extremely simple in operation.

The booth of the United States Gutta Percha Paint Co., Providence, R. I., was designed to represent the bay of a mill and gave opportunity to show the gloss and whiteness of Rice's milk-white paint when applied to the ceiling of a mill. They gave an attractive souvenir.

The exhibit of the General Electric Company illustrated the methods by which electricity may be economically adopted in the textile mill. To this end not only individual motor drives were shown, but special motor adaptations to meet the requirements of textile machinery were exhibited as well as the most economical methods of group motor drives.

The comprehensiveness of the exhibit was further enhanced by a display of the methods of lighting cotton mills by electricity. Both arc lamps with concentric diffusers for illuminating factories and high efficiency incandescent units for the effective lighting of more restricted areas, offices or individual machines, were exhibited.

Among the interesting applications of the electric motor was an 82-inch Crompton-Knowles loom driven by a one horse-power induction motor, illustrating the direct drive.

Such is the compactness of the motor that its location had to be indicated by a printed sign. Another feature of the exhibit was a line of small induction motors ranging from 1 to 20 h. p. for individual drive, as well as a 100 h. p. induction motor with an improved belt-tightening arrangement. The last mentioned motor is adapted particularly for group driving. A direct current motor with starting devices indicated the possibilities of this system of motor drive. Several motors with slight constructional modifications adapting them to textile machinery are typical of the thoroughness with which the General Electric Company has studied the textile mill drive problem.

The American Ferrofix Brazing Co. had a most attractive and instructive exhibit showing the possibilities of economies to be effected by using their Ferrofix Brazing compound in the restoration of broken and cracked castings.

Their direct application of same to the machinery used by the textile trade was most convincing and samples of their work, together with their complete equipment for heating, was well shown. The simplicity of the operation was a marked feature.

An instance of its use was on the Stafford Company's demonstrating loom, which broke one of the main levers in transit. This was repaired and replaced inside of two hours.

This is but one instance of the value of the process in an emergency, for there is no means of knowing how small or inexpensive a casting may break on a machine, which would place it out of commission until a new part was secured, which sometimes becomes most embarrassing if not at hand, and in consequence not only does it lay off many hands, but the output of the plant is curtailed, and a financial loss incurred to the owner. They offer to sell the brazing plants and shop right to mills.

The Westinghouse exhibit covered about 500 ft. of floor space, and was plainly distinguished by a large electric sign, "Westinghouse," surmounted by a Westinghouse pennant. This flag was kept waving by means of the "breeze" generated by Westinghouse electric fans.

A line of motors manufactured for the textile industries were shown in sizes ranging from 1/3 to 5 h. p. Switches for controlling the motors were also shown. Mill type arc lamps with plain and corrugated diffusers for indoor service were shown in use. A large assortment of electric fans were also to be seen, both operating and as a still exhibit. Those operating had blue Westinghouse pennants attached, which made quite a unique effect fluttering in the breeze. One of these was placed on each of the large square posts around the exhibit, as well as in a large number of other places around the building. A large revolving picture rack contained about 50 views of the various textile industries, showing the many usual, and in some cases unique applications of motors to machinery.

A very large portion of the Westinghouse exhibit was not included within their space, there being 20 of the textile machinery manufacturers exhibiting their apparatus driven by Westinghouse motors.

The Westinghouse Company distributed from their exhibit a beautiful publication containing valuable information on the subject of electric motors as applied to the textile industry, including a number of papers prepared by electric specialists in this line. The Cooper Hewitt Electric Co. showed six Type K direct current lamps operating through a mercury vapor converter on alternating current. Each of these lamps give a column of light forty-five inches long and one inch in diameter, with an efficiency about three times greater than arc lamps. They are notable for diffusion and distribution of light, and are used mainly for industrial lighting where color distortion is not objectionable, such as machine shops, foundries, spinning mills, freight sheds, etc. They are supplied for either direct or alternating current.

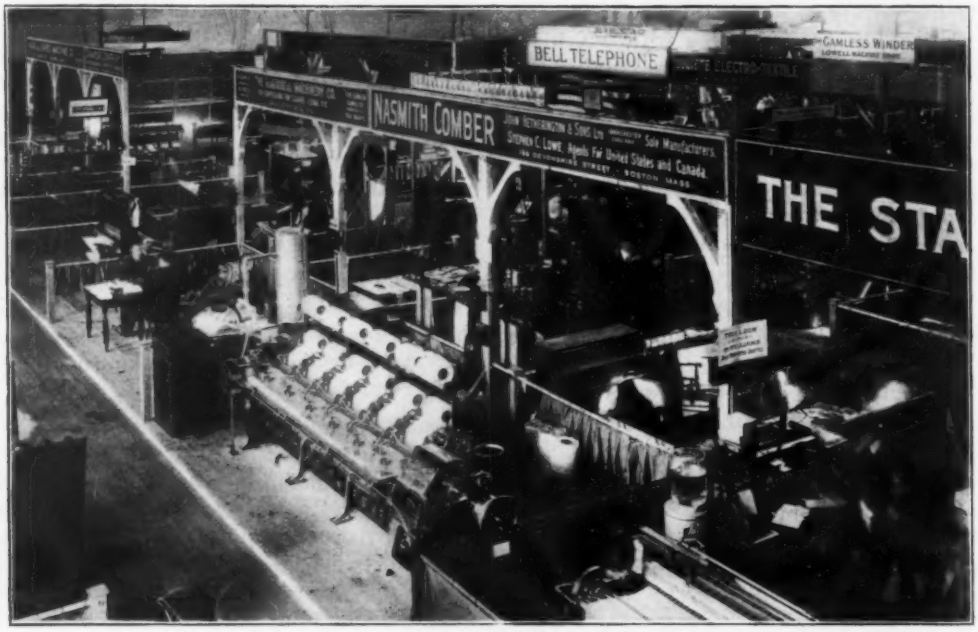
The following Westinghouse men were in attendance.

J. C. McQuiston, Mgr. Publishing Dept.; J. J. Gibson, Philadelphia; T. P. Gaylord, Chicago; S. L. Nicholson, Mgr. Industrial

Power; M. H. Merrill, Boston; S. St. J. Morgan, Boston; Albert Walton, Boston; F. T. Tucker, Charlotte, N. C.; J. P. O'Shea, E. D. Hays, Chas. Robbins, F. Reibel, D. F. Stokes, H. I. Emanuel.

William Sellers & Company, Incorporated, made an exhibit which called attention to that branch of their business devoted to the lines of shafting and power transmission.

They arranged a running exhibit illustrating the practical operation of their Binder



A VIEW IN THE COTTON MACHINERY EXHIBITION.

frames, mule pulleys, guide pulleys and other of their standard articles, with shafts running in various directions, both horizontal and vertical, and meeting numerous conditions of driving of shafts not in parallel that any mill may at any time require.

A novelty of the exhibit was a form of "bicycle drive," illustrating a practical means of running two machines on either side of a mill aisle with one belt and driving pulley from the line shaft.

They showed and explained their "True Ball and Socket Bearings" (both hand lubricated and self oiling) so constructed that they will readily adapt themselves to deflecting strains in any and all directions alike. It was noticed that in their descriptions they used the expression "True Ball and Socket." This is an expressive term, as many makers put upon the market boxes pivoted upon four set screw points, and christen them "ball and socket," when as a mechanical fact they do not possess the features and advantages of a box having a ball exterior surface carried upon socket supports.

The items they exhibited form but a trifling part of what they make, but served to illustrate their underlying principles.

The Philadelphia Lubricant and Mfg. Co. exhibited the Philadelphia grease cups and cylinder lubricators. This grease cup provides for automatic lubrication of grease to the bearings without the use of spring compressions, the feeding force being compressed air. They distributed a pamphlet on the lubrication of machinery bearings that attracted much attention.

The Simplex Process Co., New York, demonstrated the merits of their process of bleaching raw stock, the inventor of the

process, Mr. Buggenhoudt, being in charge of the exhibit.

The huge hydro-extractor exhibited by the Schaum & Uhlinger Co., Philadelphia, attracted much attention and was examined with a great deal of interest.

The Jas. H. Billington Co., Philadelphia, exhibited a line of bobbins from the Philadelphia Bobbin Co., shuttles from the Philadelphia Shuttle Co., belting manufactured by the Danforth Belting Co., and loom pickers from the Keystone Picker Works as well as other mill supplies of interest to textile manufacturers.

One of the interesting displays was that of the Oil & Waste Saving Machine Co., Philadelphia, who showed one of their turbine centrifugal oil filters and oil waste saving machines described elsewhere in this issue.

The Lord & Nagle Company, publishers of the Textile World Record, had their space fitted up as a resting place for visitors. Desks, chairs, rugs, plants, flowers and books gave to their space an attractive appearance, and almost every passerby stopped to shake hands with the representatives of the publication with which they were so familiar. A story in itself could be written of the many interesting visits to that space.

Among the visitors was the Vice President who was there decorated with the carnation which he wore in his buttonhole at the banquet.

The Textile Manufacturers' Journal had an attractive space near the door, the walls of which were adorned with photographs.

The Cotton Publishing Company of Atlanta were exhibitors, and their representatives were on hand to greet visitors.

The International Sprinkler Co. of Philadelphia exhibited a line of automatic fire protection devices, consisting of all styles of International automatic sprinklers designed to meet special conditions where they are to be installed. Besides the wet system they exhibited the dry pipe valve used in systems where water in the pipes would freeze. They also showed their improved alarm apparatus, which notifies the watchman or the fire department when a sprinkler has opened.

The Luce Compress and Cotton Co., Magnolia, Miss., exhibited their new Luce Compress which takes the cotton direct from a standard condenser and makes a square lap bale weighing 500 pounds or more with a density of 30 to 35 pounds. One of these baling machines will take care of the product of ten gins, or less, and is virtually a continuous press. It is also very simple in operation and construction. Cotton baled with this compress can be sampled as easily as the ordinary planter's bale and takes up much less space in storage.

Address of President Arthur H. Lowe.

Ten years ago a few gentlemen in Charlotte, N. C., believing that good results would be accomplished by association and co-operation organized the Southern Cotton Spinners' Association. From that small beginning this splendid association with a membership of over one thousand, has been developed. The next great step is a consolidation with the National Association of Cotton Manufacturers, making the largest, strongest and most influential association of cotton manufacturers in the world. President MacColl made a most cordial suggestion looking to this end in his address to that association at their annual convention in Boston.

The work of the association has been varied and the achievements have been phenomenal. It has held annual conventions at different places, at which valuable papers have been presented, and matters of great importance to the industry have been originated and developed. The proceedings of these conventions, which have been published, make a valuable addition to the history and literature of the cotton industry.

The association has been of great value and force in forming public opinion and in promoting questions where concerted effort is required. I believe that the record of the past is but an indication of what will be accomplished in the future. This convention is proof to my mind that this association has just started upon the work that it gives promise to accomplish.

The association is indebted and grateful to all of the members, and to the speakers, who have contributed papers, or who will take any part in our program. We are also indebted to the press, espe cially the textile and local press, for the splendid support they have given to the work of the association in the past, and in giving prominence to and encouraging the arrangements of this convention.

We gladly recognize that the textile press is one of the most important influences in the development of our industry, and the country is fortunate in having such a strong, alert, aggressive, yet conservative and able textile press.

This association is recognized as one of the great representative organizations of the cotton industry of the country; invitations are extended to it to attend by representatives nearly all of the leading industrial conventions and commercial gatherings that are now held in this country. It has also been invited to send representatives to conventions and conferences abroad. This association, jointly with the National Association of Cotton Manufacturers, the Southern Cotton Association and the Farmers' Educational and Co-operative Union have arranged for a conference of the cotton manufacturers and cotton growers to be held in Atlanta, Ga., on the 7th, 8th and 9th of October of this year, to be followed by an extended trip through the cotton growing States. Splendid results, to both growers and manufacturers, are expected from this conference.

This association has been influential in promoting many important movements. At the present time we are receiving valuable reports from special agents of the Government, members of this association, investigating the conditions in the cotton trade in foreign countries, a movement that was started by this association.

There are many problems before the manufacturers that can only be accomplished by concerted action. There are some that the manufacturer must work out alone. We represent one of the most important industries in the world. To my mind, there is no field in human activity that affords more opportunity and imposes more responsibility than is put upon the cotton manufacturer. It is his business to clothe the people. He assumes the responsibility of a very intricate and trying business. The highest type of business ability is required. He must be an expert upon questions of tariff, finance, transportation, rates of exchange, immigration, insurance, prices of cotton, value of, and operation of machinery, labor conditions, market conditions for goods, coal, supplies, etc. He assumes the responsibility and welfare of his employes; he must be their main-stay; he must give them employment and wages; he must have a care for their health, happiness, education, even religion; he must take an interest in their trials, ambitions, successes and failures. Many manufacturers have charge of every detail of a small city. They must provide houses, streets, sewers, sidewalks, water supply, lights, schools, churches, stores, hopitals, parks, play-grounds, entertainments, etc. Everything to be found in a thriving, up-to-date municipality, except the poor house and jail; I have never seen either of these in any mill village.

In these mill villages the people are better housed, better fed, better clothed, more contented, with a less percentage of crime, sickness, poverty and want, than is found among the same class of people in the towns and villages of similar size anywhere in the world, and no amount of fanatical or political misrepresentations will change the fact.

It is only natural that men in such positions, and their enterprises should become the object of all kinds of critics, especially of the paid writer, who for hire is ready to break the 9th commandment which says, "Thou shalt not bear false witness against thy neighbor." Such people do not grasp the conditions. They remind me of the man who set fire to his woods and destroyed his whole property because he had found a few thistles. But, gentlemen, we must go forward in our work in the future as in the past, increasing wages, shortening hours, raising the age limit of children as conditions will justify, regardless of these critics who are destructive, not conservative.

At the present time we are in the midst of unusual activity in cotton manufacturing. It is easier to make sales than to make deliveries. In fact, the whole country is in a prosperous condition, and it will continue to be so, so long as the great crops and the enormous output of gold continues. Practically the only complaint in the country today is the shortage of the labor supply. The whole country needs labor in every enterprise, both field and

factory. This is especially true in the South. It is to be regretted that the honest efforts made in perfect good faith by some of the cotton manufacturers, members of this association, to divert the flow of immigrants from the cities where they are not wanted, to the South, where there is a crying need, should have offered opportunity to the Government officials at the behest of the labor organizations, to prosecute the manufacturers. During the year ending June 30, 1906, 1,100,000 immigrants came to this country; 374,708 were booked for New York, 198,691 for Pennsylvania, 86,539 for Illinois, 73,863 for Massachusetts, 447,397 for New Jersey, 58,415 for Ohio, 27,942 for Connecticut. A majority of which are said to have remained in the cities of New York, Philadelphia, Chicago and Boston, while the number booked for Alabama was 1,471, Georgia 713, North Carolina 263, and South Carolina 235. Think of it and tell me what you think of men who oppose a better distribution. The splendid showing made by the manufacturers and the sorry plight of the Government before the court at Greensboro, N. C., showed the true condition of this remarkable case. The impressions given and charges made, in some of the papers, that these prosecutions had the approval and encouraged support of the cotton manufacturers of the North, is absolutely false. I am a member of the Arkwright Club of Boston, and of the National Association of Cotton Manufacturers. I know and often meet many Northern manufacturers. I have never heard a word or seen anything that would suggest that any manufacturer of the North was in sympathy with the effort to discourage immigration to the South. I firmly believe that all the opposition that the movement has had, came from the labor agitators and politicians. President MacColl refuted in strongest language the charge that the Northern manufacturers approved of these prosecutions.

I was in the U. S. Senate at the time that the immigration bill was under discussion. All my sympathies were with Senator Bacon and Senator Tillman as against Senator Lodge and Senator Beveridge. I believe that the position taken by the Senators from the Southern states was right; and I believe that I represented the sentiment of Northern cotton manufacturers. There was no need to change the existing law or disturb the ruling of Secretary Straus. Our country needs good willing workers. There are millions of such in Europe who would be bettered if we would permit them to come to this country and this country would be benefited by their coming.

The labor situation is the most important problem before the cotton manufacturers today. The shortage of labor in the North is about equal to the shortage in the South, from all the data that I am able to obtain, and the shortage of labor, in our industry, in this country, is so great that cotton mill building is almost at a stand-still compared with what it is in England. The Manufacturers' Record reports that one machinery builder says he could sell 500,000 spindles, at once, to go into the South, if he could furnish the labor to operate them. Outside of New Bedford, the only large mill that I have heard of as being projected, is one to be built at East Boston, Mass., and I am told that the reason that that location is selected is because it is expected that the mill will get some of the city labor from East Boston and Chelsea.

We are very fortunate in having upon our program Mr. Watson, Commissioner of Immigration of South Carolina, who will give us some valuable hints as to what may be done in the way of immigration, to relieve this famine of labor. The cotton mills in the South must pass through a trying time in solving this labor problem. The change from the present condition to the time when the labor in the Southern cotton mills will be made up largely of immigrant labor, will require a great deal of patience, perseverance and sagacity. The mills should be helped in this matter, not hindered.

The future growth and magnitude of cotton manufacturing in the South will depend largely upon the number of immigrants that can be obtained for cotton mill work. The native American will drift to other industries—that he will—is the experience of the New England mills. The most needed and next great railroad development in this country should be in the South. The products for transportation in the South are bulky and heavy. Within five years a cotton crop of 16,000,000 bales will be required and grown in the South. The railroad facilities required to transport such a crop together with the iron and steel, the coal and coke, the lime and cement, the lumber, the produce and fruit crops, will be enormous. All this means a demand for labor by industries. That will draw from the cotton mills. The discussion of this question at our last convention has been of inestimable value. There is a better understanding of the real conditions, there is less stealing of help from one mill by another. Wise movements have been started that will result in further improvements. Efforts are being made to get immigrants. The prejudice against immigrants is slowly but surely disappearing. The necessity of immigrants is recognized.

In future, verything possible must be done to get new help, make the work in cotton mills attractive in comparison with other employments. Good comparative wages must be paid, and manufacturers must do everything possible for the health, comfort and welfare of the employes. Remove the erroneous prejudice against cotton mill work. Make the mill attractive. Make the work attractive. Make the village attractive. Make all the conditions and surroundings healthful, both morally and physically.

The demand for the cotton mill products will tax the full productive capacity of the mills in this country for many months. The increase in population in this country has been far more rapid than has been the installation of new cotton machinery, and the inability of the mills to procure sufficient labor leads me to believe that there will be a steady demand for the production of the cotton mills at good prices for some time to come.

The demand upon the mills in England, largely from their colonies, has justified the construction and equipment in that country during the last three years of mills containing ten million spindles, against the few hundred thousand that have been put in in this country. There is very little probability that England or the foreign countries will furnish increasingly large quantities of cotton manufactures for this country, if no change is made in the tariff; but before this country can become a big factor in furnishing manufactured cotton goods in competition with England and European mills, in foreign countries, there will need to be some solution of our labor question.

A few years ago there was a good supply of labor

in the South, and we were building mills rapidly, and temporarily the production exceeded the home demand. No doubt this condition will occur again. I do not believe, however, that we are approaching any such condition at the present time. The recent depression in the stock market alarmed some people. It will probably have some slight effect upon general business, overtrading always brings reaction, but the strength of the real business of this country lies outside of Wall street and the stock market. I do not believe that it can have a perceptible effect upon the cotton industry until such time as we shall be able to procure labor enough to run our cotton mills at full capacity.

Each season brings its questions of special timely interest and the association must never relax its efforts for the purposes which mean the future good of the cotton industry. Every effort to increase the quantity and improve the quality of the cotton produced in this country should be supported. Every effort to develop cotton manufacturing in this country should be encouraged. Every effort to open the foreign markets to our cotton manufacturers should be encouraged; every effort to bring desirable immigrants who will work in our cotton mills should be encouraged. Every effort to develop an American merchant marine to carry the products and manufactures of our country to foreign markets should be encouraged. Every effort to preserve the forests that protect the water sheds that furnish the power to drive the spindles and looms of our mills should be supported.

Let everything possible be done to eliminate accidents in our mills. Do all we can to secure good, safe and economical insurance for the employes. Teach frugality and encourage the establishment of savings banks and co-operative banks. Do everything possible to improve the health and healthful condition of the laboring people. Join the movement to fight and stamp out the dreaded white plague, "tuberculosis," and all other kinds of contagious disease. Encourage and support the textile and industrial schools. Advocate the introduction of courses of business and commercial study in the universities and colleges. Stand for and encourage those things that are for the permanent good of the cotton industry. Create public opinion that shall support helpful legislation and oppose adverse legislation.

Let the association set high standards in the methods of doing business. Let the cotton products of the American mills be the standard in every market in the world. Let every member of the association be enthusiastic and loyal in the support and encouragement of the work of the association. So will the association be a benefit and a help to the industry we represent, and to the individual member.

The Addresses at the Convention.

American Business Honor.

BY WILLIAM WHITMAN, Boston, Mass

In the last analysis human nature will be found to be pretty much the same among leading civilized nations. Just at present, however, the people of Europe have some reasonable, if not some substantial, grounds for an unfavorable opinion of the business integrity of Americans. Why should they value, or be expected to value, us more highly than we appear to value ourselves?

In the face of wholesale public denunciation by some of our own people, of men, of methods and things in our own country, not only the foreigner, but the patriotic American, may well question whether there is anything right in us. Rights of property have been threatened. Restrictions upon the accumulation of wealth, which would abolish one great stimulus to industry, have been proposed. The revenue system, under which we have enjoyed a common prosperity and a phenomenal national development, has been characterized as a corrupter of morals—the parent of wicked trusts and monopolies.

The products of one of our greatest exporting industries and the methods of their manufacture have been so assailed and condemned by high authority as to impair their sale at home as well as abroad. Ministers of the gospel of peace and good will in churches supported by industrial earnings denounce from the pulpit what they are pleased to term, "The Spirit of Commercialism," alleging that it has contaminated every department of active life.

Then there are others who allege that our material prosperity is accompanied by great evils, which we are not only to fear, but from which we should pray for deliverance. The whole nation is kept in a constant state of unrest by an army of agitators, most of them under the guise of reformers. They have become so virulent, unreasonable and blatant as to deserve to be condemned as reformers and characterized as common scolds.

It is true that there have been some amazing and shameful examples of misused trust by men who had the confidence of the people; who held high social positions; who were intelligent and educated—men who are graduates of universities; men who by reason of their special opportunities which they had enjoyed owed a special obligation to society. I am not here to condone them. The shock which their disclosure gave to the public is in itself the strongest possible evidence that there is no decadence of honor among the people.

The duty of the hour, however, is to conserve and not to destroy. Hardly less wicked than those who have abused their great trust are the shallow and sensational critics who from their love of notoriety or for selfish purpose labor to create a panic in the public mind. All good men should unite in condemnation of both classes of offenders. Reforms are to be brought about as the result of careful deliberation; hasty, ill-considered and intemperate action should be avoided. Without condoning the evils that have existed in corporate management, we should recognize, appreciate and

preserve all that is good. There can be no doubt but what the disclosures to which I have referred already have introduced high standards in all corporate management.

We workers in the common industry believe in reform, for true reform means growth. We strive to do better work of some kind today than yesterday. With some it may be to secure a larger yield or a longer fibre from the field; with others a larger or better output from the factory; with others an increased power of labor through new mechanical appliances. Again it may be in discovering a new use for our product, or more cordial and co-operative relations with each other. In all activities we are workers together for the common good.

The sensational portion of newspaperdom delights in exposing and exaggerating all the frailties, immoralities, scandals and crimes common to all communities. Should it then be cause for surprise if other countries value us according to what they understand to be our valuation of ourselves? For business reasons it is to be regretted that character stands no higher in America than it stands in European countries.

This estimate undoubtedly militates against the investment of foreign capital here and the extension of financial transactions with us. It creates a barrier against the growth of our foreign commerce by prejudicing the millions of consumers all over the world against American products. It must be borne in mind that these products compete with those of Europe in the world's markets. The virtue of our European competitors and rivals will not prevent them from spreading all over the world American animadversions upon the honor and business methods of our people, or upon the merits of the products of our national industrials. It is surely inadvisable for us to furnish our European rivals and competitors with the means of destroying, or retarding, the use of American products in foreign countries.

These, howeevr, are not our chief considerations. While we, as business men, should deserve the good opinion of other peoples, and while it is desirable for us to enjoy it, it is not by any means indispensable. We can risk financial or commercial loss, but we must not lose our own self-respect. The honor of American business men is to be preserved at any cost. The question naturally arises—is American business honor decadent? I answer "No."

A business experience of more than fifty years satisfies me that the standard of business honor is higher today than ever before, and I believe it to be equal to the standard of any other nation. May I not accompany this expression with the declaration in your behalf of a purpose not only to preserve this standard, but to make it even higher than it is now?

Our material development during the past quarter of a century has been unexampled. It has placed us foremost among the nations in agriculture, manufacturing, mining and commerce. This vast volume of business which is so great that it cannot be comprehended in its entirety in any statistical exhibit, has been built up and is now conducted upon credit.

The actual money used for the purpose of exchange in the transaction of this business is relatively insignificant. Honor is the foundation of credit. Character and honor are synonymous. Character has been described as the power to make talent trusted. Wealth or property without honor is an insecure basis for credit. Have we made a mistake thus far in trusting each other? No!

The losses during recent years from all forms of dishonesty amount to so small a proportion of the grand total of business transactions as not to be regarded as a material factor. A large part of this immense business is carried on without any written contract, and a larger part underwritten, but not technically binding contracts. The spirit, not the letter, of the contract is the essential thing. Business men trust each other. Without this trust our vast business could not be carried on.

Methods of the New York Cotton Exchange.

BY THEODORE H. PRICE.

ATTACK ON THE EXCHANGE.

At the present time on the New York Cotton Exchange, I am anathema and maranatha, and many of my former friends are my severest critics because of the action I have latterly taken with regard to the New York Cotton Exchange. In any discussion of the subject upon which I am to speak, I will, notwithstanding the criticism I seemed to have aroused, endeavor to approach the issue in a judicial frame of mind.

I may briefly refer to the action I have taken with regard to the New York Cotton Exchange. I asked for and secured an injunction, which demanded in specific terms that they should obey their own rules, by-laws, the laws of the state of New York and of the United States. The counsel of the exchange, in commenting upon the subject, is reported by the New York Sun to have said:

"Although Mr. Price's injunction will do little except enjoin the classification committee from doing things that are already technical violations of the by-laws of the exchange, the terms are so general that the committee could not continue its work, and without the classifying of cotton, trading cannot go on."

I am unable to differentiate between a technical violation and a real violation of any rule. The law itself does not recognize such a thing as technical murder or technical theft, and I submit that if it be necessary that the by-laws of the New York Cotton Exchange be violated to enable it to continue its present methods, then is it not time that those who are invited to trade upon the New York Cotton Exchange, be put upon notice of such condition, and am I to blame if, having bought cotton under the rules of the New York Cotton Exchange, I insist upon the enforcement of those rules, to protect my rights thereunder in the consummation of my contracts?

APOLOGISTS FOR THE EXCHANGE.

The New York exchange has, during the past year or two, been subject to much criticism. This criticism has resulted in the enactment of statutes

in many Southern states, which, practically, put transactions on the New York Cotton Exchange under the ban of illegality. Under such conditions, there have appeared for the exchange two apologists. S. T. Hubbard, a former president of the exchange, and a brother of the present president, delivered recently in Boston an address in defense of the exchange. A letter from Arthur R. Marsh, one of the board of managers of the New York Cotton Exchange, in defense of the New York Cotton Exchange, appeared in the Atlanta Constitution of April 26.

The burden of Mr. Marsh's defense is that since the cotton market of New York is geographically handicapped, by disadvantage in freight rates, it can attract no cotton except the undesirable residuum of the crop, and that the contract must, therefore, be made such as will permit of the delivery of this undesirable residuum.

The gist of Mr. Hubbard's argument is if you buy at a discount, you can sell at a discount, and that the great advantage of the fixed differences between grades, which prevail in New York, is that "if you receive cotton at one valuation, you wish that valuation to remain permanent until you redeliver it or sell it." Another statement made by Mr. Hubbard is as follows: "The cotton merchants of New York have maintained and increased their dominant position in the world's markets, by offering to the cotton trade the same standard of classification since 1886, from which the other markets have departed."

This latter statement of Mr. Hubbard's, in passing, I most emphatically challenge, and am in a position to prove that the standard of classification, which now exists in the New York market, is not the same as that of 1886, but one considerably debased as compared with that of 1886. It is one of my chief contentions that this standard should have been maintained, and that it has not been so maintained. This, however, is a detail. Let us consider, first, the question of the so-called "fixed differences."

These differences are fixed in November for a period of ten months, and in the succeeding September for a period of two months. Just why the year was thus subdivided, I have never been able to understand. The character of the crop cannot be known in September, and it is but little better known in November. The past year's experience has shown that the grade differences established by the law of supply and demand, in November, were very much wider than those established by the law of supply and demand in February, and this is one reason why the New York contract has depreciated relatively, as compared with the value of real cotton.

NO RIGHT TO FIX PRICES.

But let us consider the basic principle underlying the right of the exchange to fix differences for a period of ten months. The advantages of such an arrangement are not apparent to me. Is it legal? Has the exchange any more right to say that good, ordinary cotton shall be worth within 125 points of middling cotton for a period of ten months, than it has to say that middling cotton itself shall be worth twelve cents a pound, for a period of ten months? Good, ordinary cotton and middling cotton are, as has been proved by this year's experience, things differing widely from each other. The action of the Cotton Exchange in attempting legally to compel delivery of good, ordinary cotton on the basis of middling contract, at a fixed difference, for a period of ten months, is about as illogical as it would be for the Chicago Board of Trade to say that, for a period of ten months, a contract for 5,000 bushels of wheat may be liquidated by the delivery of 5,000 bushels of corn at a price of 50 cents a bushel less than that at which the contract for the wheat was entered into.

There is no more reason why those who trade in New York contracts should be protected against the legitimate fluctuation in the value of the different grades, than that they should be protected in the value of the basic grade itself, i. e., middling. Not only is the practice without reasonableness but it has worked, is working, and will continue to work, the greatest possible harm to the New York Cotton Exchange, if it be not speedily abandoned.

The spinner sells his goods for delivery during January, 1908. He desires to protect himself against any radical fluctuations in the market for the raw material. The past year's experience has shown that the New York contract affords no protection. It has declined largely as a result of these fixed differences while the price of cotton, which the spinner required, has advanced. If the differences between the grades, month by month, or week by week, has been co-ordinated to the actual value of the respective grades, the New York contract would have continued to maintain, as have the Liverpool and New Orleans contracts, some just relation to the price of all grades of cotton.

A planter desires in July to sell against his prospective crop of January contracts in New York, and if in November, through a mistake, either in judgment or intention, on the part of the revision committee, the differences on the high-grade cotton were made unduly narrow, and the farmer produced these high-grade cottons, the result would be that the New York contract which the farmer had sold would relatively advance, as compared with the value of spot cotton in the South, and the farmer would be forced to sell his cotton in the Southern market at a price perchance considerably less than the just equivalent of the basis, which he assumed he had obtained when making the original transaction.

REPEALING THE LAW OF SUPPLY AND DEMAND.

The truth is, gentlemen, that the attempt to fix the differences between the grades, whether it be for a period of ten months or six months, is an effort to set aside the operation of the law of supply and demand, and as such, must work injustice and result to the ultimate injury of all concerned. If a mistake be made in fixing these differences, it is irrevocable. If conditions change so that it is apparent that the differences are wrong, it is impracticable to correct them and the result is that the New York contract has largely ceased to be availed of by the trade itself for any legitimate purposes of protection, and has been relegated by statutory enactment in many of the Southern states to the category of those things which may be described as gambling, rather than business, even though business involves, as it must always,

more or less speculation.

We come now to consider Mr. Marsh's contention that the New York Cotton Exchange is the clearing house of the world. That it is at a geographical disadvantage of $1.50 a bale in freight, and that therefore, in order to maintain some reserve stock of cotton in New York, with which to clear the balances that arise in this great clearing-house, we must so let down the bars as to attract the undesirable cotton, because we cannot get good cotton. I have great respect for Mr. Marsh's opinion, but it seems to me that he takes an untenable position.

A SINGLE STANDARD FOR COTTON AND COIN.

London is the clearing house of the world. It is there that the world's debts are settled by the payment of net balances. What would be said if in the world's clearing house, a debased standard of currency were suddenly to be adopted and silver instead of gold made the medium by which the exchanges were settled. Does London, when it finds its stock of gold insufficient for the needs of its clearing house, proceed to say that, since we cannot get gold, we will do the next best thing, and make the people who have relied upon us for clearances settle their balances pro and con in a deteriorated currency? No; it raises its bank rate and its discount rate, and despite whatever pressure may be exerted, it attracts enough British sovereigns or gold bars to settle the various differences between the nations of the world who are members of that great clearing house.

Has the New York Corn Exchange pursued a similar course? No. Shortly after the organization of the New York Cotton Exchange it became apparent that the public, being optimistic and hopeful, as a rule, generally were buyers of cotton rather than sellers. The astute gentlemen who are largely responsible for the existing rules and by-laws of the New York Cotton Exchange, recognizing this fact, as a rule, are sellers rather than buyers. They sell what they do not have in the hope that delivery of it may not be demanded, and to make sure that it will not be demanded, the process of rendering the stuff that was to be delivered less and less desirable, year by year, has continued until there are in New York some 20,000 or 30,000 bales of cotton which, I think, have been there from three to four years, and some of it longer, and which no one can be induced to buy except for the purpose of redelivering it as a means of depressing the market.

Such conditions, gentlemen, should not be permitted to exist. If New York aspires to be the clearing house of the world, it must maintain the standard by which such clearances are to be made, so that it will be beyond reproach.

GRADE, COLOR AND STAPLE.

Cotton has three essential characteristics which govern its value. They are the grade, the color and the staple. There is no limitation in New York upon the delivery of cotton with a staple so short that it is almost unspinnable. In fact, in my opinion, there is in the New York stock at present a considerable quantity of cotton that approaches dangerously near, so far as its staple is concerned, to what are ordinarily described as "linters." This is cotton which has remained in New York for an indefinite period. The standards of the New York Cotton Exchange should take account of these three essential characteristics. They should be simplified so that it is not possible for anyone receiving 100 bales of cotton to have to take, as he may today, 30 differents grades in lots of one bale each.

In my opinion, the certificate system, so-called, has done more to make possible the recent decadent condition of the New York Cotton Exchange than almost any measure that has been adopted by it. Liverpool, which has the largest cotton market in the world, has refused to adopt it. New Orleans, which is the next largest cotton market, has refused to adopt it. There cotton, when tendered upon contracts, is physically delivered by the seller to the buyer, and immediate arbitration is held to determine its grade or value. If this arbitration be in error, an appeal to an entirely different set of men is practicable. In New York, the same committee that classes the cotton assumes to rectify its own mistakes, and it is not human nature that a body of men working constantly together, and solidified by that community of interest which arises that their salaries are all drawn from the same employer, should ever convict themselves or each other of any serious error of judgment.

REFORM, NOT DESTRUCTION.

Do not understand me as an opponent to the commercial theory which found expression in the establishment of the New York Cotton Exchange, and which will still justify its existence if that theory be worked out by proper, reasonable and commercial rules. I believe that the New York Cotton Exchange can be made a valuable auxiliary to the entire cotton trade of the world, and that it can be made to provide the necessary insurance which dealers in the article require against the hazards of their business, through the distribution of this hazard among the many who are willing to speculate in cotton. But, in my opinion, this legitimate function cannot be performed unless there is a speedy change in present rules and practices of the New York Cotton Exchange.

Its standard of classification must be made permanent. That standard must be rigorously and fairly enforced in the classification of cotton. The rules must be so changed that a man receiving cotton has some reasonable opportunity to legitimately merchandise it, and not hold it simply as a "big stick" over the head of the misguided speculative buyer of contracts. It must be made practicable to change the difference between the grades as the law of supply and demand dictates, and it must be made practicable to correct errors of classification by an appeal to an authority other than that which made the original mistake.

So far as the geographical handicap in freight, of which Mr. Marsh complains, is concerned, I do not think that amounts to much. London is the greatest seaport in the world, and there is no place that, as a seaport, suffers from greater geographical disadvantages. It would seem that, long ago, the tortuous Thames and the heavy port charges would have deprived it of its pre-eminence as a seaport, but the commerce of the world continues to centre there because a merchant going to London can be sure of buying al-

most anything that he requires out of the stock there on hand. Logically, the cotton mills of South Carolina should spin the cotton at their doors. As a matter of fact, they are today buying much of the cotton that they require in Alabama, Texas and Arkansas, because there they get the quality which they find is essential to their business.

A VISION OF AMERICA'S FUTURE.

Sometimes, gentlemen, I indulge in day-dreams, and today I have a vision of the United States 20 years hence, when we shall be producing a cotton crop of 20,000,000 to 25,000,000 bales, and American spinners alone will be consuming from 10,000,000 to 12,000,000 bales. It will be necessary that, in order to secure the selection that they require, there shall be carried in some great market qualities of cotton ready for prompt shipment, north or south, east or west. There will be great cotton warehouses in New York, where the segregation of the various grades of cotton in sizable lots will be made, and sample rooms where the samples of that cotton can be promptly shown. It is entirely within the range of possibilities, under such conditions, that a stock of cotton of at least 1,000,000 bales should be carried in New York, and that spinners, with such a wide selection to choose from, should daily go there to buy it.

If the New York Cotton Exchange contract be put upon a basis that enables it to maintain a just relation to the real value of all grades of cotton, there is no reason why this business should not centre in New York, and the exchange become a community of cotton merchants engaged in the handling of the article itself, and making their profits as legitimate intermediaries instead of as at present a community of men whose activities are confined to the consideration of abstractions, and to transactions in mythical obligations, which in their essence contemplate no consummation.

To this end, gentlemen, I am working and shall continue to work. It is not generally appreciated, but, as a matter of fact, I have during the past six years received and paid for some 400,000 bales of cotton on the New York Cotton Exchange. I doubt if any other member or firm in the exchange has received and paid for as much. I have in most cases received this cotton in the hope of being able to resell it to spinners.

And it is because I have found the difficulty in such resales a constantly increasing one, until today the obstacles in the way of such business have become almost insuperable that I have been compelled to take the stand I have in favor of a reformation of existing methods.

A SUICIDAL DEFENCE.

Since I prepared the foregoing, my case against the New York Cotton Exchange has come up for argument before the referee, and, very much to my surprise, the exchange, through its counsel, is endeavoring to evade the issue upon the technical plea that I have no recourse by equity proceedings for the abuses alleged. The issue in this respect is still undetermined, but, for the sake of the New York Cotton Exchange, I exceedingly regret its adoption of this suicidal policy. Unless my allegations, which were made in good faith, are disproved by a thorough investigation, the public will continue to believe that the methods practised on the New York Cotton Exchange are not above reproach; that its contract is devised and construed in the interests of the seller rather than of the buyer; and, as surely as I stand here, the result will be the decadence and the ultimate disappearance of the exchange as a commercial factor.

American Finance.

BY EDWIN W. ROBERTSON.

President of the National Loan & Exchange Bank of Columbia, S. C.

Mr. Chairman and Gentlemen of The American Cotton Manufacturers' Association:

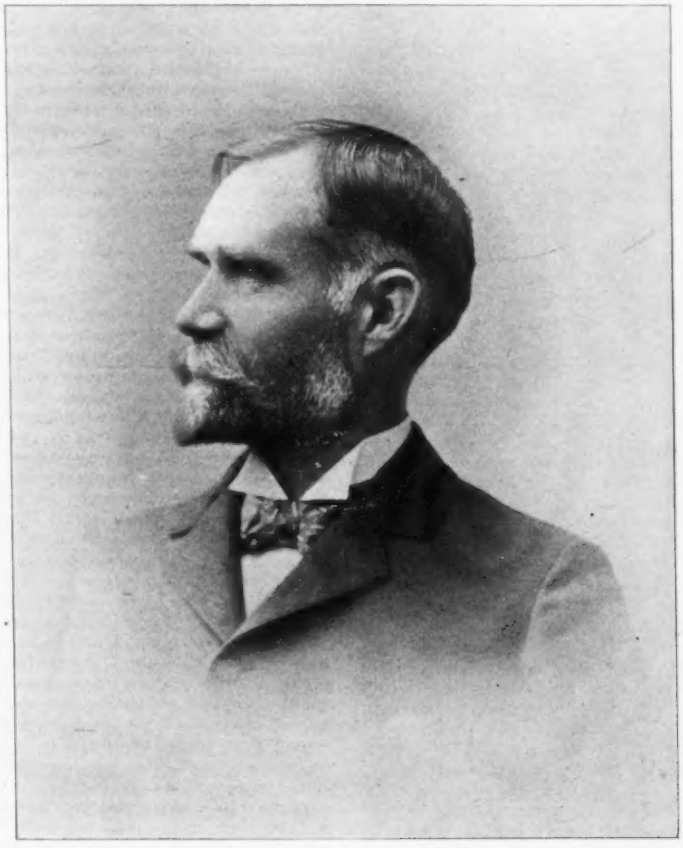
The price of money, like other commodities, is dependent on the law of supply and demand. But there are certain artificial conditions which exaggerate the operation of the law, and which can be remedied as easily as they can be created. It is on this phase of the money question that I wish to express to you my views.

Admitting that the currency laws of the country need some more elasticity, which may probably be best conserved by a large central bank, we are confronted at this time by the possibility of certain powerful speculative movements which have entered the field of actual money, as they have the field of stocks and cotton, and it is to this side of the money question that we should at least pay the compliment of our attention. Money is a mere measure of value; the medium of settling balances, and when we consider what a small percentage is needed in trade for this purpose, we are almost persuaded that we have a sufficiency, if it could be so adjusted as to give its first use to actual business conditions, and lend its use secondarily to speculative needs; but unfortunately these conditions seem to be reversed.

The so-called country banker picks up his daily paper and notes "Call money high,"—ranging from twenty per cent. to may be one hundred per cent., and he becomes uneasy, not knowing what advances he may allow, thus curtailing and unsettling home credits and otherwise disarranging local business, because under our system of finances the conditions of the country are governed to a great extent by those prevailing in the large money centres, although the money there concentrated represents in an enormous degree the deposits of the whole nation. Possibly that same country banker finds his institution temporarily with a little surplus cash on hand, and perhaps he is but human and cannot resist the tempting bait of twenty, or fifty per cent., or more, offered for call money, as it will look so satisfactory in the undivided profit column when those austere directors meet semi-annually to perform the solemn duty of declaring the rate of dividend. So off goes this surplus to the great maelstrom of speculation, and the manufacturer and the business man sees the local supply of the life-blood of his business community diminished by just so much, or perhaps by twice or ten times so much, as has gone on its way to serve speculation.

This leads me to the discussion of the question

of call money, which seems to play such a potential part in the matter of the proper distribution of our finances. While it is true your speaker is a country banker, his duties carry him to the acknowledged great money centre of our country many times each year, and he has had the pleasure to have met and to know personally many bankers there, and with no intention whatsoever to say anything unpleasant to their feelings he believes they, the great bankers of this country, and therefore of



ARTHUR H. LOWE, EX-PRESIDENT AMERICAN COTTON MANUFACTURERS' ASSOCIATION.

the world, little realize the disturbance to business in the remote corners of the nation which is caused by any selfish or unwise policy on their part; nor do they realize the deep-seated prejudice which is stirred up in the minds of the every-day banker and business man when it is believed that a few stock-gamblers in Wall Street have been permitted to create a money panic. In the last analysis, the common, ordinary business and working man controls the government, and the day may come when in a blind rage they may start smashing things by means of Congressional enactments, and you know the disaster that can be created by changes in the laws governing finance when those changes are conceived in ignorance and born of revenge.

I have carefully watched and examined the statements of the banks called for by the Comptroller of the Currency, and have made enquiry of many of the more prominent bankers as to what percentage of their loan resources was represented by what are known as call loans, and have been surprised to find that the proportion in the larger banks ranges from fifteen per cent. in some banks, to sixty per cent. in others. This means that of their entire deposits, fifty to eighty per cent. of which are composed of money deposited from points beyond such business centre, about thirty per cent. gets back into the legitimate trade of the very country which furnishes it. Of course, allowance is here made for the necessary legal reserve. These figures may not be accurate, but from the best information obtainable they are approximately correct.

The first thought was that, as Congress had seen fit, as wisely, to prohibit loans on real estate by national banks, and to limit loans to any one person, firm or corporation, some such limitation should be placed on call loans; but upon more

thoughtful consideration it seemed that this would not cure, but would at times, perhaps, work a hardship, and then some more equitable remedy was sought which would aid commerce without too seriously affecting the great volume of business done on our exchanges—some remedy which will tend largely to minimize the effect and reduce the number of the frequent upheavals in the stock market, many of which have a serious result upon ordinary commerce. I think this can best be accomplished by limiting by law the rate of interest on call loans to the same rate now fixed by statute in the several states on what are generally termed time loans, as distinguished from loans on stock exchange collateral subject to call. While this may not be fully corrective, nor answer the full needs of our growing commerce—and I hardly think it would—it will tend largely to turn back to the uses of business much money now diverted to stock speculation, and result in a more general distribution of our country's financial resources.

Let us illustrate the uses of the sub-treasury. A sub-treasury is a supply house of money. You know how important it is in your manufacturing operations to have a supply house in a nearby city. You get supplies quickly; you are required to keep a smaller stock on hand, and have less capital tied up. They are the warehouses for the collection and storage of government receipts; the disbursing agencies of moneys to meet fiscal expenses, and the redemption depots of our monetary system. In this last capacity they can be likened to a network of railroads which transport the freights of one section to another, where they are needed, and haul back in turn the products of the latter, thus continually keeping all sections supplied with the commodities required and furnishing a way to market for those products of each respective section which it is desired to be converted into cash. Money deposited with the sub-treasury in New York is immediately available at New Orleans, and vice versa. So you can readily understand that by the establishment of the government factors with reference to general business wants money would cease to be congested at a few points, but would be accumulated where it could serve the government and the business interests of the country.

I believe that with the restriction of the former, and the enlargement of the latter recommendation, much real good would become quickly apparent, and the expansion of our monetary system would naturally follow. Perhaps the very interests which now oppose any change may be the movers. Possibly we may all get together on some feasible and practical scheme, a result much to be desired, bringing as it will relief and aid to all branches of industry and commerce, and building upon a good foundation a system of finance which will inspire respect abroad and greatly increase the general welfare of our entire country.

Export of Cotton Goods.

BY DR. W. P. WILSON.

The United States production in 1905 was $450,000,000.of which $400,000,000 was consumed in the home market.

The total exports of 1906 was $58,000,000. Over $36,000,000 of this were uncolored piece goods, leaving only about $17,000,000 for various colored and printed goods, yarns, etc.

The uncolored piece goods, therefore, make up nearly three-fourths of our total exports, and our exports to China alone of this class of goods are greater than our exports of all classes of cotton goods to other countries.

The Southern States are producing the bulk of our exportable goods. Three states—South Carolina, North Carolina and Georgia—are each manufacturing more cotton goods than any other state in the Union except Massachusetts.

Possibly the solution of the problem of the procuring of a greater share of export business may yet be accomplished by the mills of these states.

For a number of years the Philadelphia Commercial Museum has been actively engaged in studying the possibilities and conditions of nearly all the markets of the world, and the results of its investigations have been frequently laid before manufacturers. Many requests have come to the commercial museums, and continue to come, from merchants abroad desirous of making connections with American mills.

The Bureau of Information of the Museums has interviewed a large number of the principal mills, commission men, individual merchants, exporters and trade organizations, and has repeatedly endeavored to stimulate the trade with foreign countries in cotton products. The results in so far as the appreciable increase in the export of these lines is concerned, have not been very encouraging and so long as the home market remains satisfactory or is able to consume the bulk of the product of our mills, it is not at all likely that there will be any great development of this trade.

The United States Government has quite recently sent out men to investigate some of the markets in which Great Britain is selling large quantities of cotton goods, but which buy but small amounts from the United States. Samples of goods sold in largest quantities, illustrating patterns, widths and weights, have been secured by these men and submitted to some of the leading manufacturers of the United States. It is to be hoped that some results may follow these investigations.

There are certain of our goods which have made a name for themselves and have, as a matter of fact, become the standards by which all cotton products are gauged in certain markets, especially in China and certain parts of Africa. On the other hand, a majority of the world's markets accept the English product as standard. English weights, widths and lengths, English methods of packing, have all become accepted standards, and American manufacturers endeavoring to introduce goods into a majority of the countries are obliged to comply with the peculiar requirements of their markets. It is very doubtful whether manufacturers in this country will be willing to modify or change their systems sufficiently at the present time to meet these requirements. There is no question that at first, at least, the cost of making these changes will not be justified by the volume of trade secured.

If, however, the time comes when our mills produce more than we can possibly consume at home, and foreign markets become, as they very likely

may in the not distant future, an absolute necessity, some way will doubtless be found to meet conditions as they exist. Possibly this can best be done by mills which will devote their entire attention to foreign markets. This will be especially advantageous in handling the trade of countries in which the styles and patterns do not change as frequently as they do in the United States. I have known of several instances in which very fair sized orders of American cotton goods have been lost because when the orders were received the mills were no longer running on the goods from which samples had been submitted. For instance, an Australian firm took out samples of a certain line of plaid goods, submitted them to their customers, secured orders which they sent at once to the United States, but when the orders reached here the mills were no longer running on plaids. Stripes had become the order of the day and nothing but stripes could be secured. In some markets the mere changing of the color of the thread in the selvage from blue to red absolutely kills the sale of the goods.

In some markets our ordinary methods of packing will not do at all. Often goods must be baled and wrapped in waterproof paper. All of these changes which seem insignificant to the buyer at the other end practically entail such an amount of labor and expense here as to eat up the profits on the goods. If, however, certain mills were able to devote their entire attention to foreign markets this could largely be obviated.

As a matter of fact, certain standard patterns have been selling in Africa for years and will probably sell for many years to come without any change.

Results of our own investigations, reports made by Government officials and the experiences of manufacturers and exporters, who have made really serious efforts to break into new markets, have convinced our Bureau that unless a mill or exporter is prepared to spend considerable money, to put up with some losses and no little inconvenience, it will not pay them to attempt to push any but a limited line of cotton goods in foreign markets. There are certain parts of the world in which it would doubtless be possible to gradually create a demand for our own standard goods, even in the lines of prints, but this result could be accomplished only slowly and the exporter must not expect at first to be able to sell full, unbroken case lots of each pattern.

It is no easy matter to displace Great Britain in the world's markets. Her exports of cotton goods today, although she grows absolutely no cotton, are greater than all of the rest of the world put together. It is over ten times as much as that of the United States. In fact, Germany, France and India each export more cotton goods than the United States.

It may seem strange that the Director of on Institution whose efforts are largely devoted to the fostering of export trade should speak so discouragingly of the possibilities of this particular line, but it is not, and never has been, the object of the Philadelphia Commercial Museum to induce manufacturers to enter foreign markets unless there are some prospects of, at least, comparatively profitable returns.

Imports and Exports of Cotton Manufactures.

BY JAMES W. BURKE.

As representing the NHational Export Association of American Manufacturers, of recent formation, I desire to express my appreciation of the privilege of addressing your thoroughly representative body.

It is not my intention to weary you with statistics, but rather to point our certain defects in our present export methods, which will have to be remedied before we can occupy in the world's markets for cotton goods the place to which we are entitled, as growing 80 per cent. of the total supply of raw cotton. Today, as you know, gentlemen, we only furnish 5 per cent. of the world's exports of cotton goods, or about 8 per cent. of the amount shipped by England.

The principal cause of these unsatisfactory export conditions lies in the fact that our manufacturers have not been in direct contact with the European markets, where the battle of competition is fought and whence the financial arrangements of the world's cotton goods trade are controlled. They have been satisfied with the small orders which come to this market (where there are about 500 export merchants) more or less in connection with the disposal of the proceeds of various raw materials consigned here for sale. They have lost sight of the far larger orders placed in Europe (where there are some 5,000 exporters) for shipment to all parts of the world, by resident and visiting buyers, who are quite ready and willing to give a fair and impartial comparison to American cotton goods, if presented to them in a systematic manner, and upon terms on a level with those of European manufacturers. It is to a great extent by cultivating personal relations with the European partners and traveling buyers of oversea houses that European cotton manufacturers have secured and retained a hold upon the trade of the world.

While pointing out these defects in our present system of export trade it cannot be denied that to remedy them is more than individual effort can be expected to accomplish, while official intervention (however valuable) is necessarily of a general character. Nothing short of combined effort on the part of our manufacturers will remove the existing obstacles to the natural development of our exports of cotton manufactures. Only collective action abroad can ensure results. Our manufacturers must therefore put their shoulder to the wheel and by united efforts get their export business out of its present unsatisfactory rut.

The lack ot all the needed facilities to which I have called attention has been the subject of deep study by a number of practical business men and manufacturers, who have set to work to remedy the present unfavorable state of affairs; the conclusion having been reached that the only way to improve conditions was for our manufacturers to club together and settle in some representative form in northwestern Europe, which is the seat of our competitors and of the masters of international trade. It has been justly argued that our manufacturers would thus all at once enjoy the same facilities for distribution and financing which have

so far given supremacy to our competitors.

This has finally led to the foundation of the National Export Association of American Manufacturers, with headquarters in Paris (the leading continental centre of textile trade), branch offices in all the most important markets and correspondents in all parts of the world, as the only means of effectually furthering and protecting the trade interests abroad of our manufacturers. The permanent presence of the Association in all the leading trade centres of the world places our manufacturers for all practical purposes on a level with their European rivals (particularly as to the selection and watching of selling agents) and the cordial appreciation which the practical nature of the work and methods of the Association has met with shows that a long felt want has at last been filled through collective action.

Co-operation with the cutting-up trade would also be desirable for the joint study of the qualities of fabrics and styles of garments used in foreign markets.

Closer Relations Between Producers and Manufacturers.

BY S. C. BARRETT, Atwater, Ga.

The Farmers' Union desires direct trade between the growers and the manufacturers. With this proposition briefly presented let me say further that one chief reason why we wish this co-operation is that we may eliminate gambling in cotton.

For our own part in the South we are establishing cotton schools in which we are educating our children to understand the grades and classifications of cotton, and to know just as well good cotton when they see it as the fellow who sticks his murderous knife into our cotton bales and sends it mutilated and robbed of several pounds of its texture to the compressers and mills.

We are building warehouse depositories in which we will be able, without damage, to hold and store our cotton against the necessity of hasty sales, and against the damage of the weather, and to keep it there until it will command such a fair and reasonable price as we think the necessities of the world will justify.

We are making every preparation which reason and common sense can suggest to deal directly with you, and we are now so situated that we can do, and will do, what we say we will do.

Our people are becoming better informed in every detail that relates to the imperial staple and to our agricultural crops. We are getting in better shape financially than we have been since the war. We are organizing cotton companies, and we can safely promise you that with or without your co-operation, henceforth cotton will not be forced upon the markets of the world as rapidly as it is gathered from the fields.

The middleman is no longer a necessity. Let us get that splendid fact in our minds to stay.

As we are becoming better educated we can do for ourselves what the middleman has been accustomed to do for us.

There is absolutely no necessity for us to support any longer the great army of middlemen and gamblers.

With this statement, which ought to include everything that is necessary as a basis of conference, we are ready to entertain a fair and honest proposition from the manufacturers, and we are ready to guarantee a fair deal on our part.

We are better prepared to protect cotton from damage than ever before.

Now then, gentlemen, if you manufacturers will see your own interests as well as ours, and will faithfully aid us in eliminating the speculator and gambler, and thereby divide the profits of our fields between us—if you will do this, the act will be appreciated and remembered to our mutual profit. If you will not help us to do this, then our people are resolutely and irrevocably determined to stop speculation themselves.

We know that cotton, properly cared for, is currency all over the world and that it will not depreciate in value by holding in proper warehouses; that cotton is a world's necessity and an axiom.

There is certainly business sense on the side of the manufacturer and spinner as well as on our side to realize that it would be best for us to get together.

If you are intelligent and fair, and if we are intelligent and fair, why should we have any help to transact our business? We are late in learning the truth, but we are learning it profoundly, now that it is certainly the middleman and the gambler who is the greatest enemy to the cotton grower of the country.

Heretofore the cotton grower has not received his share of the profit of his fields, owing to the conditions over which he foolishly thought he had no control. But today in the might of his interest and in the strength of his organization, he is master of the situation. He knows his rights, and knowing dares maintain. So, gentlemen, the Farmers' Union, twelve hundred thousand strong, and growing with majestic strides, comes to you today to see if we can get together to fix a staple price and grade for the great commodities which we have to sell.

We come to you honestly and frankly. We will meet you as honorable men, and if you fail to meet us we must look elsewhere for help and co-operation. With the largest organization of actual producers in the world, we will rally around the new friends whom we make and find.

And when that alliance is made we propose to keep the faith with those who are true to us without yielding, without change, and without disloyalty.

It is not necessary to say more. I have stated a clear, frank proposition. I know, as you know, that it is possible for us to get together, and with the pledge that the Farmers' Union will fill its part of this contract to the letter, I now cordially invite from you your frank and fair expressions as to the stand which you propose to take.

If this general union of effort and co-operation can be made we shall each be richer, each freer and each more self-respecting in the years to come. It seems to me that every suggestion of common sense, that every dictate of prudence and that every argument of commerce pass to the noble and legitimate alliance which I here and now propose.

Proper Means of Identifying Cotton.

BY R. G. HITT,
Manager of The Standard Tag Co., Atlanta, Ga.

The problem of identifying cotton is a big one, but it seems to us that the very fact of the problem being momentous is enough to enlist every energy in its accomplishment.

During the years 1877-8 we began our experience as a warehouse scalesman in the city of Augusta, Ga., following this with four years' experience as a public weigher, doing at the time almost all of the business of the city. Our duties required the reweighing of large quantities of cotton for foreign and domestic use, and the fact that fictitious gains were common and impossible of detection was so evident that we were once seriously inclined to address the local mills at that time, upon identically the same subject.

One strong case in point, in this, our first experience—we were to receive and reweigh one thousand bales for an exporter from one of the large warehouses. The cotton had been tiered for some time—perhaps six months—it was then July or August. This cotton gained in weight, over and above the figures marked on the bales and on the bills, from ten to twenty pounds a bale. The cotton was superficially as dry as dust, and bore no evidence that it had ever been wet. We protested against marking up the weights, but were told that we had no right to decline to do this, as the cotton was dry and the reweights must be right. The warehouse firm was perhaps the most careful in the city in regard to weights, and were never known to mark a bale above its real weight, and did not do so here. The facts were that the cotton was tiered wet, the moisture being driven into the centre, the surface becoming absolutely dry, there to remain until opened at the mills.

During our experience and observation we have noticed that shipments across the water are often marked up, in anticipation of the gain in weight coming through the storage in the hold of the vessel—and again, it is an occurrence of the most common happening for cotton to be stored in damp situations for this purpose, and again, the custom of placing cotton at the gin house flat on the ground, without protection, is another source of an artificial gain in weight.

Time is too limited to touch on all sources of this fictitious gain. Only the few that are most impressive are given.

It may be asked if much of these gains are not lost before the cotton reaches the mills. This depends on conditions. It may be partly lost, it may be all lost, and an actual loss sustained, which is, of course, very common, especially where cotton is held in dry localities through the summer months. If bought by the mills at the psychological moment, the mills will get all cotton to spin, but this is a chance which must be taken, and with the selling interests, as a rule, struggling to avoid a loss in weight, and with many determined to increase it, this chance becomes a chance indeed and one which should be avoided if it is possible to do so—and we believe it possible by concerted effort by the Association represented here today.

Through thirty years of the most active experience in handling cotton damaged by fire and water (for we have handled the great majority of all cotton losses of this character in the South during this period of time), we have had the most unusual opportunity to study the effect of outward applications of water on the interior condition of the bales.

Our opportunity to learn these conditions was afforded from the fact that large quantities of this cotton had to be reconditioned; that is, to be picked and rebaled, and we were personally responsible for the condition, as were handling a commodity against which there was much prejudice. The rebaled cotton most invariably showed a certain percentage of moisture, from ten to twenty pounds a bale, varying with conditions. This cotton was rebaled without drying, as the moisture was rarely great enough to effect the spinning properties of the cotton, nor to attract attention, except from a keen observer, or from one whose attention had been called to the fact.

It is fair to say that in cases of this kind every bale is not effected. Those protected from the streams, of course, do not show the effect as those coming in contact with larger volumes of water.

Now to the point of protection—as stated in our circular letter, a law should be passed, either State or Federal, requiring the ginner to be a sworn weigher, to have his books open for inspection and to have his scales regularly attested, to be made to weigh every bale of cotton as it comes from the press, and before being exposed to the weather, and to have a fixed, indestructible, metallic tag attached to each bale of cotton, conforming to the receipt, by which its identity could be preserved until it reaches its final destination.

A bill could be prepared to cover these points, and added to it, the requirement that the ginner's tag, when removed at the compress, should be reattached, so that the bale's identity should be preserved. If this law required the gin receipt to go with the bale, and this receipt to conform with the tag, it is evident that no fictitious gains in weight would be added to the bale, for the purchaser would become the custodian of the original weight at the gin.

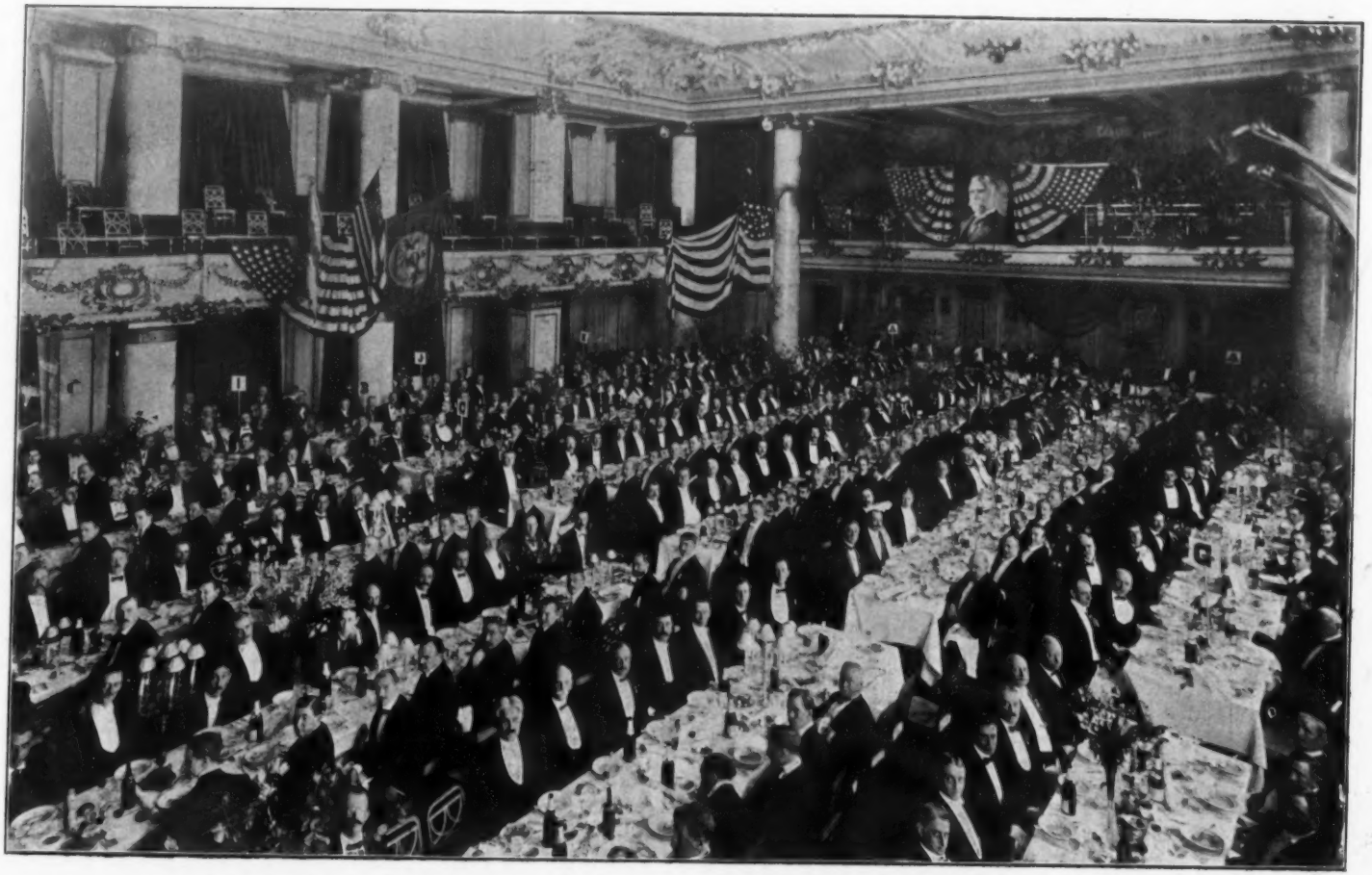
It might be contended that if no gains are to be allowed, no losses should be allowed. A loss would show for itself. There is nothing to defend a loss, as there is nothing to justify a gain.

There would probably be some opposition to such a movement of reform. Those benefiting by artificial gains in weight would oppose it; but the great power of right is with the movement, and, if properly sustained, must triumph.

The Legislature of Texas passed such a law three years ago, but the bill was vetoed by the Governor on account of some defect, and there was not interest enough to press it any further.

The adoption of such a measure has been agitated in Congress, but there was no force behind it to make it effective.

While we might be the beneficiary to some extent of the passage of such a law, it would be on account of our good fortune, if such exists, of having made a study of these conditions and an effort to provide a means to improve them, but our interest, if all we could hope for, would be but a grain of sand to the seashore, as compared with the interests of the cotton mills of the world.



THE BANQUET OF THE AMERICAN COTTON MANUFACTURERS' ASSOCIATION AT THE BELLEVUE-STRATFORD HOTEL.

Patents and Inventions.

BY GEORGE OTIS DRAPER.

On Jan. 1st, 1907, there had been granted 840,460 American patents, not including 38,398 design patents, 23,830 trade-mark designs, 59,300 trade-mark titles, 13,302 trade labels and 1,878 trade prints. The patents were not, of course, active as a whole, since patent protection only lasts for 17 years. On Dec. 31st, 1889, there had been granted 418,659 patents, leaving 421,801 patents still valid at the recent date. This shows that within the last 17 years we have taken out more patents than for the entire period previous, and there is no sign of diminution of inventive energy.

The great majority of patents are taken out by individuals in the hope of profiting by royalty charges or sale to other individuals or corporations, for the average inventor has not sufficient capital to manufacture and introduce his invention himself. The patents that are retained by the inventors rarely produce any profit at all. While a great number of patents are acquired by corporations, it is really surprising how few corporations make a specialty of patent purchase, and how few patents are purchased compared with the number issued. Recent investigation seemed to show that the Draper Company, with which I am connected, was acquiring more patents per year than any other individual or corporate organization, outside the electrical field, in which the General Electric Company came first and the Westinghouse Companies, considered as a unit, came second. This would seem to show that cotton machinery inventions have been concentrated under one management to a greater extent than in any line outside electrical development. The cotton manufacturers of this country are therefore peculiarly interested in the relation of patents to their business, since they are not only users of cotton machinery, but of electrical devices as well.

In any great line of machine application, there are usually three classes of manufacturers. One makes a specialty of patented improvements, since there is more chance for profit in this line, if successful. Another class springs up, attracted by the profits of the first, to produce copies made as near as the law allows, usually coming a little nearer than the law allows in the eagerness to avail itself of the true merits in the new ideas. The third class, which includes the great majority, makes the standard trade forms of machine such as are open to general competition, not seeking necessarily for patented improvements, and yet not avoiding such improvements if they come to hand without special search. Concerns in this class sometimes acquire valuable new ideas accidentally and specialize some particular part of their output. Those of the first class must necessarily devote a great deal of time and expense in experimenting with new ideas. This preliminary loss on one simple machine can easily run into hundreds of thousands of dollars. Since those of the second class are ready to compete for the profit of the successful ideas without having contributed to the experimental losses, it is necessary for those in the first class to defeat their intentions, so far as possible, by use of legal assistance to keep them strictly within the lines of imitation allowed by law.

Concerns which introduce patented improvements naturally appreciate the importance of legal protection. In the warfare with competitors, it is not always necessary to use up all available ammunition in the first conflict. The defendant in a patent suit often gains nothing from a favorable decision, but the labor of defence in further litigation, while loss of any one suit often means failure and dissolution. There is a lot of misplaced sympathy from small competitors, simply because they are small. Any man is entitled to profits from his own labor and his own brains, when using his own capital, whether it be small or large; but his circumstances or his necessities do not warrant him in profiting from the labor, brains, or capital of others, unless he renders a suitable equivalent.

The introducer of a patented improvement not only has to encounter the competition of infringers, but he has to overcome the prejudices of the possible purchasers. The average man does not like to change a process or a machine that he is used to, any more than he likes to change the style of his clothing or the hours of his meals. He can be convinced of the necessity for change if there be sufficient proof of a profit; but his help also dislike to change their habits, and they are not so sure of sharing in the profit. Many a good idea is killed because the operatives will not assist in getting possible results from new machinery, and the very operatives who have become efficient by long practice, with the old machinery, are less likely to encourage adoption of the new ideas. We have found that we sometimes get better results with new machinery where help is used that never knew the old machinery. They have got nothing to unlearn.

It is comparatively easy to introduce a new idea when the machine is undoubtedly better, and sells at the same or a lower price. If the improvements necessitate complication, and include patented ideas so that a higher price is demanded from the purchaser, the task of introduction becomes Herculean. The prospective buyer wants proof that they are worth the extra cost, assurance that no one else shall ever get them for less cost, assurance that the competitors will not offer duplicates at a lower price, and assurance that the introducer will not bring out a better device to profit a later purchaser. It took years of effort to prove that a power loom was better than a hand loom, and the doubter can figure losses by depreciation, extra interest, and patent expiration, in a way that could have prevented the introduction of any new process ever conceived. While the figurers are figuring, however, others more promptly adopt the new ideas and get years of profit before the mathematicians change their minds.

Certain manufacturers are hindered in the adoption of labor-saving machinery, by the antagonism of their help. Organized labor is often opposed to labor-saving improvements because it believes that such machinery increases the numbers of the unemployed. The fallacy in this line of reasoning has been too often exposed to need attention here, but the proof does not always reach those affected by the proof.

Although speaking to a national organization, I recognize that the majority of those present are

from the Southern manufacturing section of this country. Although the labor of the South has averaged to be cheaper during the twelve years in which this comparatively new industry has grown up, the South is prompter to adopt labor-saving machinery than its Northern competitors, very possibly because of its freedom from domination by labor organizations. In our own experience, we have found that Southern operatives, which are mainly of native American ancestry, show a very gratifying pride in being employed on superior machinery, and in getting the best possible results from such machinery.

My personal experience with cotton machinery patents covers a period of some eighteen years, in which time I just reached the hundredth patent mark for myself, while also supervising the patenting of many hundreds of the inventions of others. Inventions are not always valued by quantity, and many illustrate logic rather than genius, for they are worked out with the definite intent of strengthening the situation when the claims of the important patents are not all-controlling. Association with hundreds of inventors by personal touch and correspondence gives much chance for study of human nature, as the average inventor is as original in make-up as in conceptions. About nine out of every ten ideas submitted by them are either old or impractical, while nine out of ten of the patents obtained are also of no probable value. In a patent business, however, it is often advisable to cover any new suggestion that may have possible utility, as the principle may be used in some more important adaptation. It is often saddening to note how much real ability, persistence, and concentration is wasted in the development of machines which are too complicated, too costly, or too far advanced for the present skill of the average operative. I have seen hundreds of thousands of dollars put into wonderfully ingenious inventions by capitalists who were not practiced in the introduction of machinery, or in the art to which the machinery was to apply. There are many similar mistakes made by many of us fully conversant with the necessities of the situation, but we have a chance to profit by the experience gained, since we keep on in the same line, while outside investors are usually content with one trial in a new and unsuccessful venture.

The value of inventions is not proportionate to the brain power expended on them. One inventor may produce a machine after years of effort, having countless members, each of which must be separately perfected to co-operate with the others, while another inventor may instantly conceive a simple idea of far greater value.

The profitable inventions are nearly all simple in character; and successful simplicity illustrates a much higher order of mind than do complex devices performing the same purpose. The great artist produces desired effects with a few suggestive strokes. The great author condenses thoughts into few words. The Rabbeth spindle, the most marked improvement in its line, depends on novelty for the mere substitution of a loosely held bearing for a tight one. The Sherman spindle, which made a distinct advance in the art, simply substituted a metal contact for the Rabbeth fibrous packing. The popular Draper spindle combined the advantages of the Sherman metal contact at the top of the bolster, with the fibrous packing at the lower end. The greatest royalty ever received by a spindle inventor, was given for a mechanical device to prevent a loose bolster from turning, though any mechanic could devise a dozen such mechanisms, after the need for such an invention was obvious. It took twenty-four years for one to discover that two rows of temple teeth on the old horizontal wheel temple were better than one row. The idea of making a spinning ring reversible controlled that particular art for years. Spinning rings were strained out of true in hardening for fifty years or more before one thought of hardening them on a round plug. The Northrop loom depends fundamentally on the grasp of a ridge by grooves in a spring, and the placing of a self-threading shuttle eye in position to allow the thread to be drawn into place by the motion of the shuttle.

While logical inventions are usually made by practical men in constant touch with the machinery perfected, the revolutionary changes are often brought about by men who are not experienced in either seeing or handling the machines that they improve. Dr. Cartright, who invented the power loom, had not even seen a hand loom when applying for his first patent, though he made several marked improvements later by adapting some of the hand loom devices to his own construction. Most of the Northrop loom inventions were devised by men whose experience with looms was very limited, as our Hopedale companies had not for many years been working on loom improvements, outside of temples, before the filling-changing experiments were started.

The invention made by men lacking practical experience in the running of the machines to which their inventions are applied, must be modified by practical men in the majority of instances, before they are fit for commercial use. It is usually advisable to have inventors carefully advised by practical men during the development of their ideas. This was well illustrated by an attempt to develop an idea at long range, in our earlier loom experimenting, when a most ingenious and highly educated designer worked for three years in his own shops, to develop a mechanism which we needed. His inventions were covered by ten patents; but not one of them ever went into practical use, and the ten patents have not apparently related in any way to any of the mechanisms which have gone into use. Other inventors, more in touch with the practical necessities, invented the necessary devices at short notice, when the problem was turned over to them.

The peculiarity of individuality in inventors was once amusingly illustrated in the rival efforts of two inventors in our own employ, of different nationality. The American was so impressed with the idea of defeating his English competitor, that he shaped the frame of his machine to imitate 'Bunker Hill,' and cast the necessary weights used with the machine also to duplicate Bunker Hill monument. If we study history, we will note that the battle of Bunker Hill was a defeat for the Americans; and history repeated itself at the later day. The "Bunker Hill Warper" never met the public gaze. The personal dealings with inventors are often interesting, as illustrating peculiar types in human nature.

One inventor actually expected to carry off a check for a half million dollars from our office, from the sale of his patent; and another purchased a revolver before a meeting, with the expressed intention of eliminating certain officers of the Draper Company from further utility on this earth, had they not purchased his ideas. It is sufficient to say that the ideas proved worthy of purchase. Years ago when the spindle business was more active, it was generally understood, though not actually authorized, that anyone could sell a spindle invention to our company at a minimum price of $100. An inventor brought us six allowed patent applications to sell on this basis. About four months later he brought us eight more; but it was not thought best to encourage so prolific a mind, and they were purchased at less than the usual rate. Not discouraged, however, within six months more he brought twelve more cases. As a matter of fact, although sufficiently novel to be patentable, the ideas were of no probable value, and it was thought best to decline to purchase them at all. In view of the fact that the inventor had been to considerable expense in having the patents prepared and the fees paid, they were later taken off his hands at cost price, which effectually discouraged him from further ingenuity. None of the patents ever proved to have any value.

Inventors often lose possible profits because they are not willing to wait for slow returns, and possibly sometimes because they lack the necessary faith in their own ideas. Several noted inventors were actually urged by us to stick to a royalty basis, which would have given them returns considered large even in these days of high figures; but they insisted on cash.

It might be dangerous for us to advertise the fact that we have often paid inventors extra bonuses after finding their ideas valuable, although having no moral or legal obligation to do so, but the totals of such sums thus paid make a very material sum. The public often considers inventors ill-used as a class, because they do not reap the entire profits from their conceptions; but the act of inventing is not necessarily arduous, or necessarily worthy of great return, especially as no invention is of the slightest commercial value until effectively introduced. I know of an actual case where an inventor who was delayed for fifteen minutes in keeping an appointment, made pencil sketches during that time that were the foundation for six granted patents without any further modification, the sketches being submitted to counsel in their original form.

The risk in development and introduction of inventions is well illustrated by the scarcity of corporations engaged in the business. There are so many chances for loss that the profits are few and far between. No one knows when purchasing or developing an idea, that there may not be some patent application already in the Patent Office which covers the same. The public does not know any of the facts regarding such patent applications. We were once made liable by the issue of a patent nine years after its application, and we had been manufacturing the infringing device made under a patent of our own granted much earlier. We had to compromise with the owners of the new patent, since it antedated ours; in fact, we had to buy the right of use at a very substantial figure. With the hundreds of thousands of patents existing in all civilized countries, it is impossible for anyone to get accurate knowledge of the state of the art as shown even by granted patents, and some of the old ideas often turn up unexpectedly to utterly destroy the value of a re-invented device.

Many patents are made absolutely worthless by the incompetency of cheap patent attorneys, who merely try to get a patent without any thought of the real value of the claims. One French inventor, with a limited knowledge of English, had a patent prepared to cover his idea of cutting a thread on the blade of a spindle, to assist in its lubrication. He tried to explain to his attorney that he had invented the idea of putting a thread on the spindle and the learned counsel therefore procured him a patent which covered the use of a thread on the spindle, particularly specifying that the said thread could be either cotton, wool, worsted, or other fibrous material.

The patents taken out by attorneys who advertise to get a patent or charge nothing are of little, if any, value, since their claims are so twisted in order to avoid references that they can control nothing of themselves. The difficulty in effecting real improvements is well illustrated by reference to a paper which I presented before your association just six years ago, in which I referred to established improvements in American machinery, and also to interesting experiments anticipating improvement. None of these trials, as I recall them, have yet proved of merit for continued use. The Northrop loom, of course, was too well established at that time to be considered as an experiment. Within that six years, other new ideas have both been invented and established, such as warp tying-in and drawing-in machinery, the Rabbeth centrifugal spindle clutch, and the new Whitin comber.

The profits of patented machinery are often greatly exaggerated. The first patent spindles produced no profit at the price sold, until machinery was developed which could produce them economically, Some of the machinery that starts off with a good margin between price and cost is gradually made more expensive by continued improvements and additions, while the base price remains the same. I could easily refer to machinery wholly unprotected by patents, which often sells with a higher margin of profit than some of the most carefully protected types, because there is a chance for profit in making a standard trade machine that has no element of change to consider, and where the multiplied duplication allows use of the most economical processes. Introducers of patented machinery are compelled, by the very haste of its evolution, to continually perfect and change, resulting in an enormous loss through drawings, jigs, and patterns, thus made useless, to say nothing of the interruption in manufacture and the expense of developing the changes.

The successful cotton machinery inventions of the future will continue to lessen labor per product, make better product or cheapen machinery or processes. The possible field is necessarily narrowing all the while, since in many departments the operatives now do nothing but correct the faults in the material being treated, or merely as-

sist in removing product or supplying material. There are some possibilities in higher speed, and also possibilities in spreading help over more machinery. When we note a spinner tending 1,500 spindles, or a weaver running 40 Northrop looms, we realize that it may be necessary to invent new types of human beings, if we require them to cover so much space; unless we adopt some transportation system, a suggestion by no means impractical.

The surprising development of American ingenuity, which has placed us far ahead of any other inventive nation, is primarily due to the protection afforded by our American patent system. There are those who consider patents monopolistic and tyrannical, causing much of nuisance to the public at large. They think that without the patent system we should have as many improvements, and make greater progress, since all could use the improvements without pay. We know by our own experience that even if inventors were to develop ideas without profit——a most improbable theory —the public would by no means promptly grasp their advantages, but rather decline to consider them at all, in view of the change in habit necessary. People must be forced by persuasion and without the chance for profit there is no incentive to stir the possible persuader.

There are valuable ideas in the line of cotton machinery improvements, which are not introduced, since the controlling patents have expired, or because their own patents were imperfect. No one will take the trouble to introduce them since they merely educate a competitor who can copy without the expense of designing and testing. An investigator of street railway improvements recently printed similar evidence by showing how the trolley system in foreign countries eliminated a great per cent. of our trolley accidents by use of certain protective devices. On his return to this country, he endeavored to get American managers to adopt these devices, as they were not patented, but with no success. So long as business is done on a business basis it will be done with a careful reckoning of costs and improvements must be proved of value by those who can be assured of a share in the value. A patent is merely a policeman protecting the rights of ownership; and while some may question the rights of individuals as to possession of property which they did not create, there is no logic that can justly deprive one of a primary right to the creations of his own brain.

The Passing of the Last Hand Operation in Cotton Mills.

BY E. F. HATHAWAY, Boston, Mass.

Up to within the last few years there seems to have been one of the necessary operations in the production of cotton cloth which has been almost totally neglected by the large number of inventors all over the world who have been working in the textile line. Although the development of cotton mill machinery has gone steadily on for many years past, and the progress made by inventors is still unchecked by their resultant success, the mechanical development of this one process has been almost totally neglected, due to the formidable obstacles which present themselves when the subject is considered.

I am speaking now of the web drawing or drawing-in. It is true that the subject was taken up many years ago, the first record that I am familiar with being that of an Englishman by the name of Biggs who undertook the construction of a drawing-in machine about the year 1868, and although since that time there have been several inventors who have made further efforts to produce a practical machine, it remained for a Boston company, the American Warp-Drawing Machine Co., to produce a machine that was practical for every day use in the mills.

Due to the extreme difficulty in separating and controlling the harness eyes, inventors have been forced to abandon the scheme and have tried in many roundabout ways to circumvent or at least lessen the tedious and expensive operation of drawing-in.

Machines have been invented for presenting the proper harness for the draw in pattern work; machines for drawing the reed after the harness has been drawn; a successful machine has been produced for twisting a new warp on to the old one, and even a machine for tying in or tying a new warp on to the old one, but with all this expenditure of time, brains and money, they do not get around the fact that all warps must first be drawn in through the harness and reed.

About nine years ago a New England loom fixer and all-around inventor, M. F. Field, first conceived the idea of putting some appropriate spacing device on the heddles of a cotton harness in order to obtain accurate control thereof. He met with a fair degree of success and succeeded in covering the weakest point of all other drawing-in machine inventors, that is, the control of the harness. He constructed a machine in rather crude form, but which when completed handled coarse work and low sleys in a very successful manner, and the hundreds of machines which the American Warp-Drawing Machine Co. is now placing in so many mills all over the United States and Canada are the outcome of the original and necessarily rather crude machine built by this inventor nine years ago.

The evolution has been slow and tedious as the great varieties of work which a machine for this purpose is called on to handle have made it a difficult proposition indeed. Only the utmost patience, backed by capital that showed unlimited confidence in the various engineers and inventors who had the work in hand, has made it possible to produce this machine in its present perfect form, practically one machine (although made of different capacities) which will handle any kind of a pattern draw, any sley and any number of yarn which may be drawn into cotton harness of not over six leaves.

In the operation of the machine a worm or screw, something the shape of a corkscrew, worms itself through the harness spring or spacer taking a heddle with it at each turn, thus giving absolute control of each separate heddle. These spacers are placed on the harness when it is new and remain on it until it is entirely worn out and discarded, without any further attention. They in no

way interfere with the action of the harness in the loom or with its durability, neither do they interfere with the same harness, being drawn in by hand should the occasion arise, so that in only partially equipping the mill for drawing-in by machine it is not necessary to encumber it with a large amount of special equipment which can only be used on machine, but the standard equipment of harness when once prepared for machine can be used by hand without any inconvenience whatever.

The reed, no matter of what sley, is carefully handled and the proper dent automatically presented for the passage of the needle by a little device termed the reed-opener. This also operates on the principle of a worm or screw, and consisting as it does of a single turn of a screw thread, which, resting in the dents of the reed and worming itself through from dent to dent as the pattern calls, never being removed therefrom during its passage from one end to the other, gives absolute accuracy, in fact the record of machines in actual practice show millions of ends drawn without a single error in the reed.

Many efforts have also been made to produce a successful automatic warp separator, and probably no one else in the world has given this element of the work the amount of attention given it by the company building this machine. All sorts of separators have been produced and experimented with and many inventors have submitted their ideas for trial, without success. Most of these depended upon some sort of a fine hook or barb intended to deflect one thread at a time from the edge of a series of threads held in a perfect sheet, but owing to the many obstacles encountered in the nature of variations in the yarn, uneven slashing, knots, etc., together with the demand for straight drawing and absolute accuracy, it has been found advisable to use a semi-automatic separator, which, while it cannot always be depended upon to work absolutely perfect, is always under the eye of the operator, and separating as it does seven threads ahead of the one which is being drawn it leaves no excuse for the operator doing anything but perfect work.

The speed of the machine is from 230 to 260 picks per minute according to warp being handled. The work turned out is so much straighter and in all ways better than that done by hand that the saving in the weave room alone is so great that it would be desirable to draw all warps by machine even if the saving of from twenty to fifty per cent. in the direct drawing-in cost was not taken into consideration at all, or indeed if the direct drawing-in cost was greater than by hand.

As stated before, these machines are capable of handling any pattern in the draw, and the making up of the pattern controlling chain is such a simple matter that it can be handled by anyone of ordinary intelligence.

Each harness is controlled by a separate plunger clutch, which is put into engagement by the passing of a pin screwed into a bar chain, and all that is necessary in making up the most intricate pattern chain is to use the same number of bars as there are threads in the repeat of the pattern, and place a peg wherever the eye is to be drawn.

Some of the advantages of the machine over hand work are as follows:

One machine is capable of replacing four to five average hand operators as it will handle from forty to seventy-five thousand ends per ten-hour day. It occupies about the space ordinarily taken up by two hand frames. It can be operated as successfully by artificial as by day light. It gives much straighter warps than can possibly be obtained by hand work. It handles any style of one beam fancies and any number of harnesses (up to six) with the same accuracy, speed and economy as it handles prints.

It is now working daily on sleys as high as 160s and as low as 40s and on yarns from 8s to 100s. The operators are much quicker taught than those by hand, as they become proficient in a few weeks. The large number of ends it handles makes it show considerable economy, as the price paid for machine operators ranges from about eight to ten dollars per week when paid by day work, and when on piece work the price is usually set at about one-third the hand price, or from 3 1/3 to 3 1/2 cents per thousand ends, while against this the only extra cost is the spacing of the harnesses which only amounts to about ten cents per thousand heddles, and is done only once during the life of the harness.

As illustrative of the confidence that its manufacturers feel in this machine, they do not ask the mill people to purchase it outright, but place it in the mills under a small installation payment and an annual rental. The investment entailed when installing and maintaining drawing-in machines is a very small matter indeed when considered alongside of any of the other mill equipment.

This company has also perfected a tying-in machine which they intend to put out in the near future for handling work that cannot conveniently be drawn in on machine. Owing to the difficulty in effectually cleaning and repairing the harness, and the extra trouble and expense in caring for the old warps taken from the looms, together with the fact that they must be drawn in first and redrawn whenever a change is made, they strongly recommend the use of the drawing-in machine for all work within its range.

They also manufacture a leasing machine which picks a perfect lease in a warp, and have just completed a machine for handling the Draper steel harness and a machine for drawing together with the cotton harness the closed steel drop bars used on the Northrop loom.

They still leave the jacquard work to be drawn in by hand, but by this great stride into what a few years ago was an undeveloped field, who can say but in a short time we shall see the intricate patterns of the jacquard handled as successfully as harness work is now by the perfected machines.

The Cotton Situation.

BY Hon. ALBERT S. BURLESON, Austin, Texas.

AMERICAN CONTROL OF RAW COTTON.

More than two-thirds of the world's output of cotton is grown within the limits of the United States. When this fact is considered in connection

with its great value as an export article, it is readily seen that its cultivation and manufacture is one of the most important, if not the dominant industry of our country. To the section from which I come, the South, it is a matter of vital concern; for the character of the cotton crop and the price obtained therefor surely determine whether the people are to suffer depression or enjoy prosperity.

It is always a pleasure for me to meet the cotton manufacturer, because it is upon you that the cotton producer must rely to make the growing of cotton a profitable industry. The Southern planter at all times stands ready to make grateful acknowledgment to the cotton spinner for the service rendered in keeping pace with the production of cotton by constantly widening the market for cotton manufactures.

PROFITS IN COTTON MANUFACTURING.

The cotton planter thoroughly understands that for several years the manufacturers of cotton throughout the world have been receiving splendid returns. A most casual examination of the reports on the cotton trade for the years 1905-6 will disclose that there has been extraordinary prosperity of the cotton spinning industry. In Great Britain a larger quantity of cotton has been consumed than at any time during the past quarter of a century and in some districts there the record of profits made is without parallel.

In Continental Europe the consumption of cotton has increased with marvelous rapidity. Last year the European countries consumed something more than 6,500,000 bales, and today Germany is extending her trade in cotton goods more rapidly than any other country in the world, with the exception of Japan. The German cotton mills are running full time and apparently a ready market is found for their entire output. These facts clearly indicate the state of their business.

In a consular report from Yokohama, the prosperity of the cotton spinning industry there is referred to as "unprecedented"; one company declaring a dividend of 36 per cent. for the half year, a number showing dividends of more than 30 per cent., others of 20 and 10 per cent., the average dividend on the total paid up capital of all the cotton spinning companies in Japan for the half year being 17 per cent. In the same consular report, coupled with the recital of these splendid dividends, was the significant statement, "the cost of raw cotton has remained lower than usual."

NO MORE CHEAP COTTON.

The Southern cotton grower also is aware that you, the American cotton manufacturers, having the advantage of close proximity to your raw material and the most intelligent labor in the world, have not lagged behind, but you are likewise enjoying a generous profit from your business. I would not have you misunderstand me; the cotton producer is not envious of your prosperity; on the contrary, speaking for him, I beg to assure you that he is anxious for its continuance, in fact, wants to and intends to share it with you. To do this is an absolute necessity, as can be easily shown. Cheap cotton can only be produced by the use of cheap labor, and under existing conditions this is not to be had, but on the contrary the increasing scarcity of labor is a serious problem confronting the Southern cotton planter, upon whom the responsibility rests to supply the world with its increasing demands for cotton. It may surprise you to hear that ten cent cotton is not profitable. It is true that this price will bring a small return of profit to a few large land holders who engage in cotton growing, but to the great mass of cotton producers, considering the increased cost of living, it means but little more than a bare living wage. Recognizing the advantages of her situation, the people who live in the South and engage in cotton production believe that they are entitled to an increase in the price of their cotton, in fact that they should receive a minimum price of twelve cents per pound for their product.

MORE COTTON WANTED.

Last year the production of cotton for factory consumption was short of the amount actually consumed by the mills by about 1,400,000 bales. This shortage was drawn from the surplus stock on hand, and every person thoroughly advised of the present situation understands that this year, if a cotton famine is to be avoided, there must be produced an American crop of not less than 13,000,000 bales. I say American crop, because it is upon the Southern States alone that the world must continue to rely for its cotton supply.

THE COLONIAL COTTON FAILURE.

It is well known that many associations, British, German and French, have been organized to promote the culture of cotton in the colonies of those countries. Vast sums of money have been spent with a view of developing new areas of cotton production. Model farms have been established, free seeds have been furnished, bounties have been offered, the services of expert cotton growers from Texas and other Southern States have been secured, and after years of continuous effort what has been the result? Slight investigation will disclose that all of these efforts have proven futile. In all the Colonies of France, Germany and Great Britain, not including India,—and these are the countries which have been active in their efforts to create a cotton supply independent of the United States,—there was produced last year an amount of cotton less than 20 per cent. of the production of one county in the congressional district which I have the honor to represent.

Where else, then, than the South can this increased demand for cotton be met?

Not in Egypt, for the total acreage there available for all crops is less than the acreage planted to cotton in Texas alone. It is believed that the maximum of cotton production has already been reached there, for it is asserted that her food crops have already been encroached upon by cotton to a dangerous extent.

Not in British India, for the increase there is barely keeping pace with home consumption.

Surely not in China, for one of our most intelligent consular officers in a recent report has stated that the Empire at this time, and probably for a long time in the future, will not be able to increase its cotton production as its lands will be required to provide food to support its immense population.

A PERMANENTLY HIGHER PRICE.

These are incontrovertible facts and, when considered in connection with the rapid increase of the world's population, the thoughtful cotton manufacturer must recognize that a higher price for his raw material is inevitable. Recognizing these conditions, it is the part of wisdom to adjust yourselves to this situation and prepare for continuous high priced cotton.

In this connection, I direct attention to the fact that it will probably never be necessary again for the American cotton grower to reduce his acreage to obtain a living price for his product. The truth is that with the constant increased demand for cotton, with a growing scarcity of labor in the cotton producing section, with a manifest tendency toward more restricted immigration by prescribing educational tests and levying a higher head tax, there is no longer serious danger of an overproduction of cotton.

THE PLANTER WANTS ONLY WHAT IS FAIR.

These conditions are kuown, and when in connection therewith it is also known that every spindle in the world is busy working on contracts already made, the cotton planter feels that he is entitled to an advance in price for his cotton. I assure you that he does not want more than it is fairly worth. Neither does he desire, as has been charged, "to double the price of the poor man's shirt and shorten the length of the poor girl's petticoat." These are actual conditions confronting the cotton planter; the price for his labor to grow his crop is not only higher but growing scarcer. Every element entering into the cost of cotton production, his food supply, fertilizer, tools, implements and teams have advanced so much in price that he finds it impossible for him to grow cotton as cheap as heretofore. He only asks a fair price for his product.

COMMON INTERESTS OF PLANTERS AND MANUFACTURERS.

The cotton planter is not so foolish as to want to put the price of cotton so high as to diminish in the slightest its uses, because he knows full well that to do so is to ultimately make himself the sufferer. At the same time, he feels that those who are interested as consumers of his product should not be so unwise as to want the price so low as to continue to make its cultivation unprofitable, because this policy would surely lead to a material curtailment of production, which all know would prove a calamity.

The cotton grower is justly entitled to a better price than he has been receiving for his labors—for many years he has been poor, very poor. The Civil War left him so impoverished that he was unable to protect himself by the adoption of ordinary means of business precaution to secure a fair price for his crop. His condition was such that he was compelled, in order to secure the actual necessities of life, to sell it as soon as it was gathered, which resulted in throwing the fruit of his year's labor on the market within the first three months of the cotton season.

THE EVILS OF SPECULATION.

Of course, and no one is blamed for this, those who wanted cotton practically took it at their own price. Furthermore, the planter was without knowledge of the probable cotton yield for the year, and the number engaged in its production was so great and covered such a vast area that organization with a view of obtaining this information was impossible; as a result, he was the constant victim of the professional crop estimator, who frequently was the avowed representative of the European spinners, who by publishing overestimation of the crop aided in keeping the price low. And to add to his woes, his product was frequently the subject of the wildest speculation by those whose only business was cotton gambling, and as a result of this unhealthy condition, the cotton producer was invariably the sufferer.

THE PLANTER KNOWS.

You can begin to understand how the planter has suffered long, but at last he believes he is coming into his own. At last he thoroughly recognizes and understands the advantages of his situation. He knows the advantage of his soil and climate. He knows his advantage in the possession of trained labor. He knows and appreciates the immense advantage of his transportation facilities. He knows of the increasing population of the world and the constantly increasing demand for raw cotton. He knows of the persistent efforts which have been made to stimulate the production of cotton by other countries, in order to be less dependent on him. He knows, at the same time, the result of all such efforts. Finally, he knows that his indomitable pluck and energy are overcoming the calamitous conditions which for so long a time environed him, and that better days for him are ahead; and he also knows that constant alertness is the price he must pay for continuous prosperity.

COTTON WAREHOUSES.

By a system of warehouses, now being built throughout the cotton section, he will be able to store and market gradually his product, thus avoiding the distressing consequences of dumping his crop on the market regardless of the price being offered him. As a result of his efforts, through the agency of the Federal government, reliable statistical information about his crop is now furnished him; an annual estimate is given of the acreage planted, he is advised in percentages of the condition of his growing crop, and is finally furnished an estimate of its probable yield for the current year. As its gathering progresses, an accurate ginners' report advises him of its size. In consequence, by utilizing this statistical data, the efforts of professional estimators have been neutralized and the legitimate law of supply and demand is at last exerting its wholesome influence in fixing the price of his important product.

DOWN WITH THE COTTON GAMBLERS.

Through the influence of the planter State legislation is being enacted throughout the cotton section, having for its purpose the elimination of the evil effects of cotton gambling. He has no inten-

tion of injuring legitimate cotton trade, but he is determined to further the interest of both the cotton producer and cotton consumer by having laws to protect them as far as possible against the violent fluctuations of the market, occasioned by wild cotton speculation.

If there be virtue in hedging forward sales, or in the selling of futures against spot cotton actually bought or raised, there is no disposition on the part of the cotton producer to interfere, but the days of the bucket shop are numbered and, if possible, speculation in cotton, without a transaction in actual cotton as a basis, is to be brought to a speedy end.

CONSERVATIVE DEMANDS OF THE PLANTER.

It is along these conservative lines that the cotton producer is proceeding, and it does seem that the best interest of the cotton manufacturer in these matters runs parallel with that of the planer, at no point conflicting. I have briefly outlined the steps which have been taken by the cotton producer to further his interest; it is manifest that he is attempting no unfair advantage, that he seeks to injure no interest but only endeavors to secure for himself that to which he feels he is justly and honestly entitled.

THE CONFUSION OF MULTIPLE STANDARDS.

In my opinion, the next step to be taken by the cotton producer, in furtherance of his interest, is to protect himself in some way against the manifest disadvantage of the varying standards of cotton classification used in the different sections of the country. Here, too, I feel sure the interest of the manufacturer of cotton is identical with that of the producer. It is not an infrequent occurrence, in fact it is quite common, for a difference of fully a cent a pound for the same grade to exist between two markets for spot cotton within the same State. The only explanation for this lies in the difference of classification standards. In some instances certain markets for spot cotton have been known purposely to establish a very high standard of cotton classification in order to be able to offer, apparently, a higher price for middling cotton than that quoted by their competitors. This is becoming a common practice. It always tends to confusion, sometimes is used for purposes of fraud, and necessarily works injuriously to many in the cotton trade.

A SINGLE STANDARD IS A NECESSITY.

The producer feels that there should be one uniform standard classification for use in all the markets in this country, with a limited number of grades above and below middling—good alike for the grower and the manufacturer, the cotton buyer and the cotton exchanges. It is probable that the greatest benefit from a uniform standard classification would be brought to the cotton grower, who now is the victim of the grading of the cotton buyers with all which that implies. With a uniform standard, when it was once known to him, he could obtain a fair valuation for his product, but it would also be of considerable benefit to the cotton manufacturer, for I doubt not that now it is not an infrequent happening for him to be the victim of an under classification.

It is an accepted fact that the present grading of cotton is quite faulty. Recently I was given an opportunity to examine the standard of cotton classification used by the New York Cotton Exchange, and I was surprised to learn that it was graded only on color and cleanliness. Every manufacturer of cotton knows that when this is done one of the principal elements of cotton value is ignored. Dirty cotton can be cleaned, stained cotton can be dyed, and the cost of doing this is a trifle, but the length of the staple cannot be changed, and this is an important factor in determining what cotton is actually worth. Progressive farmers throughout the South, recognizing this fact, are taking steps, by seed selection and otherwise, to lengthen the staple of their cotton. Because of this, the output of long staple cotton is rapidly increasing and the demand for same is also increasing. In a few years, when more than a million bales of this cotton is brought to market, with staples ranging from 1 1/4 to 1 5/8 inches in length, then present methods of grading cotton must be changed and some means devised for properly grading it.

It is a recognized fact that ordinary cottons vary in value with every 1/16 of an inch added to the length of staple. Cotton with a lint one inch long is more valuable than cotton with a 3/4 inch staple, and this fact should be recognized and given consideration in the grading.

AN IMPROVED METHOD OF GRADING.

If a scientific method of grading could be adopted and it should be deemed practicable, I think three factors should be considered in fixing a standard:

1. Cleanliness and color.
2. Length of staple.
3. Strength of staple.

During the last days of the 59th Congress, I introduced a bill looking toward the adoption of a uniform standard of cotton classification. I did so hoping that it would provoke discussion and that it might commend itself favorably to the cotton manufacturers of our country as well as the producers. If it should do so, and some plan along the lines suggested therein could be adopted by co-operative action on the part of the producers, consumers and dealers in cotton, I feel sure it would result in inestimable benefit.

THE PLANTER IS READY TO CO-OPERATE.

Mr. Chairman, again I beg leave to express my appreciation of the opportunity to address the representatives of the American consumers of cotton. I have spoken with the utmost candor, and being a cotton grower myself I feel sure I have given you an insight into the cotton situation from his viewpoint. Again speaking for him, I beg to make acknowledgment of the great service you and those who have preceded you have rendered him in widening the market for cotton goods. He is well aware that every new market acquired means an increased demand for his product. He stands ready to meet this demand; he will furnish you all the cotton you now need for consumption, and will also continue to meet your future requirements in this line, if he can only receive a fair price for his labor. I assure you that he asks only

for a fair price, considering all conditions just as they are, and this you must admit he is entitled to receive.

A New Departure in Cooling and Humidifying Textile Mills.

BY W. H. CARRIER of the Buffalo Forge Co., Buffalo, N. Y.

It is the purpose of this paper to show both the scientific principles applying to the artificial conditioning of cotton mills, and to describe a system of conditioning which the writer believes embodies such principles most effectually.

CONDITIONS AFFECTING HUMIDITY.

Many of the failures and partial successes in artificial conditioning of cotton mills has been due to a disregard of the peculiar conditions affecting the humidity in the mill. One set of conditions is met with during cold weather, while an entirely different set of conditions is obtained in hot, dry weather. An apparatus to be entirely successful must meet both these conditions equally. A very common error in the design of a humidifying system or apparatus is to assume that a cotton mill with all its machinery may be taken care of in the same way and with equal ease as a vacant room, whereas no greater mistake could be made. An apparatus that will work to perfection in a vacant room, or even a winding or weave room, may be an utter failure under the trying conditions in the spinning room. A system may work admirably in the spinning room in winter, yet be entirely inadequate to meet the conditions imposed in hot summer weather. The most important point to be considered under summer conditions is the great amount of heat generated by the textile machinery; for it may be observed that of the great amount of power employed in driving the machinery, practically all is ultimately converted into its equivalent of heat within the building. As an illustration of this, a temperature has been observed in a spinning room 33° above the outside air with windows, doors and ventilators closed, and having no other source of heat than the power absorbed in the machinery. The effect of this temperature rise is disastrous to the natural humidity conditions in the room, for the higher the temperature the greater is the moisture deficiency, and, therefore, the lower the percentage of humidity. This relation between temperature and humidity is very close. The greater the rise of temperature the more moisture must be added, and hence the more difficult it is to humidify the room. If moist air at the point of saturation is blown into the room and there heated 9°, the resultant humidity will be 75 per cent. If it is heated 11 1/4°, the resultant humidity is 70 per cent.; if heated 13 1/2° the humidity is 65 per cent., and so on. The following test made in the spinning room of one of the southern cotton mills shows the effect of temperature rise upon the humidity where no humidifier is used. In the room where these readings were taken there was no other source of heat than that generated by the machinery.

Outside conditions:
- Dry bulb temperature ..... 48°
- Wet bulb temperature ..... 47°
- Saturation 90%
- Grains of moisture per cu. ft. 3.8

Spinning room:
- Dry bulb temperature ..... 81°
- Wet bulb temperature ..... 66°
- Humidity 44%
- Grains of moisture per cu. ft. 5.0

It may be observed that the outside conditions were those usually considered most favorable. The outside air was practically at the point of saturation, the weather was very foggy with a fine drizzling rain. A few windows in the room were partly open, yet the humidity in the mill was exceedingly low.

The following table shows the humidities that will be obtained in a mill under various conditions of temperature rise and outside humidities:

HUMIDITIES OBTAINED IN MILL UNDER VARIOUS CLIMATIC CONDITIONS WITHOUT ARTIFICAL HUMIDIFICATION.

OUTSIDE CONDITIONS		INSIDE CONDITIONS	
Temperature	% Humidity	Temperature	% Humidity
30°	100%	80°	19%
30	50	80	9.5
40	100	80	26
40	50	80	13.5
50	100	80	36
50	50	80	19
60	100	80	53
60	50	80	26
70	100	80	73
70	50	80	36.5

METHOD OF DISPOSAL OF HEAT.

The heat that is generated by the machinery in the mill must be disposed of either by natural or artificial means, of which there are but three ways:

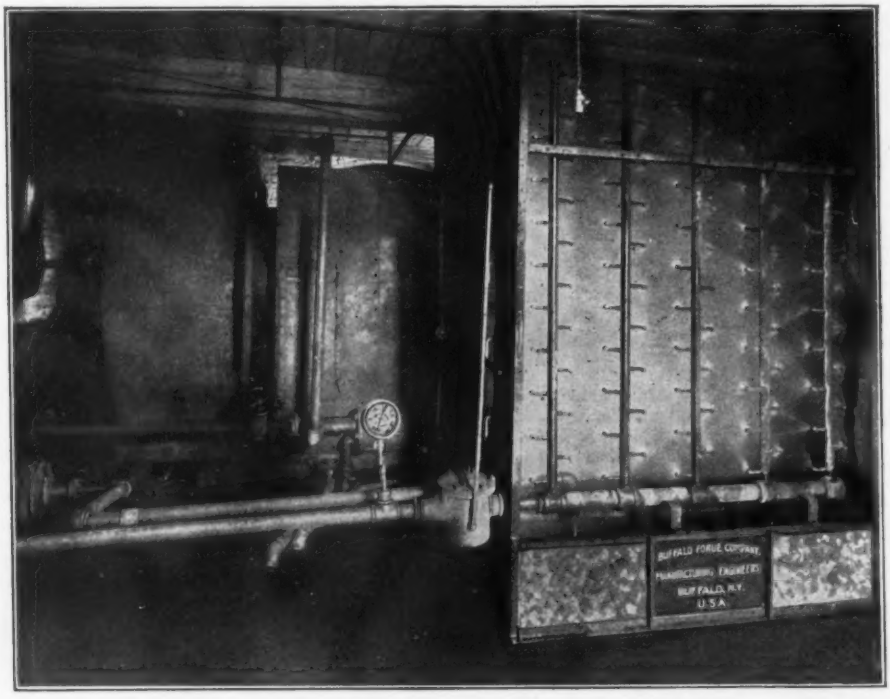
(a) Radiation—natural.
(b) Ventilation—natural or artificial.
(c) Evaporation—artificial.

The amount of heat disposed of through radiation depends on the temperature difference inside and outside of the mill. The greater portion of the heat is thus disposed of during winter weather, while in warm summer weather it must be taken care of through ventilation. There is always some natural ventilation or infiltration, as it is called, in the mill, even with all the windows and doors closed. The amount of this infiltration is equal to about one change of air per hour in the building during cold winter weather, and disposes of about one-half as much heat as radiation. It is owing to this natural infiltration going on in the building that it is impossible to humidify a building and keep it humidified without a continued addition of moisture. With the system here proposed an air pressure is maintained in the building sufficient to make all the leakage outward. By this means a very uniform condition is attained.

In order to cool the mill in summer natural ventilation is increased by opening doors, windows and roof ventilators, but at the same time the effectiveness of this means of ventilation is greatly less-

ened in summer by the smaller difference between inside and outside temperatures. Natural ventilation is never satisfactory in spinning fine yarns, but artificial ventilation can be so applied as to overcome all of the objections to natural ventilation and maintain a constant volume of air supply regardless of weather conditions. To be most effective humidifying and ventilating must go hand in hand.

Cooling by evaporation of a water spray is an effective means of absorbing the heat generated in a room, since it accomplishes both cooling and humidifying simultaneously. In cooling by evaporation approximately 1050 heat units are absorbed for every pound of moisture evaporated. One pound of moisture evaporated per minute would therefore dispose of the heat generated by 25 horse power of machinery. So far as the cooling effect is concerned, it matters not whether evaporation cools the air before or after it is introduced into the room.



THE BUFFALO HUMIDIFIER.

THE IMPROVED SYSTEM.

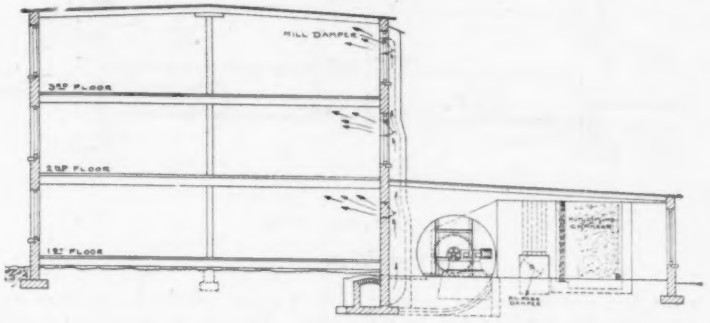
This improved system which it is the purpose of this paper to describe is a fan system. It is adapted equally to summer and winter conditions, using the same apparatus. It humidifies and cools in summer by artificial ventilation with cold saturated air, and humidifies and heats in winter by first saturating the air at the proper temperature, and then heating the air after saturation to a temperature sufficient to maintain the required temperature and humidity conditions in the room.

The apparatus consists of a humidifier, fan and heater and a system of ducts for the distribution of the humidified air. The humidifier consists of a large air chamber in which spray is atomized under high pressure by means of a large number of cyclone nozzles. The air is thus filled with an extremely fine mist in large volume, and thereby brought to a point of saturation. The free moisture is then separated from the air by an eliminator of special construction. The two principal features which make this humidifier a success are the design of the spray nozzles and the design of the eliminator. The construction of the nozzle is such that it is practically impossible to clog it with foreign material, the smallest hole being 3/32 of an inch in diameter, yet it throws a perfectly atomized mist by reason of the centrifugal principle upon which it operates. The very difficult function of separating this finely atomized spray from the air current at high velocity is performed by an eliminator of special design. The form of this eliminator was determined by lengthy experimental investigations, and has now been in successful use for the past four years. It is practically of the same form as that used in the Buffalo air washer for ventilating public buildings. The fan and heater are of the usual design and need no special mention; the only variation from the standard being

that the air is by-passed around the heater during the summer, thereby avoiding the frictional resistance of the heater.

AIR DISTRIBUTING SYSTEM.

There are several methods by which the air may be satisfactorily distributed through the room. The method adopted will depend entirely on individual conditions, such as the architectural design, size of the mill, number of floors, arrangement of departments, and whether the mill is old or new. In the smaller new mills the arrangement shown in Fig. 1 is desirable. In this arrangement the air ducts are placed in pilasters on one side of the building which connect with the main air duct running underneath the floor. In large several story mills it is usually desirable to place the apparatus in the basement, as shown in Fig. 2, using two sets of apparatus and two main ducts with hollow pilasters on either side of the building. This arrangement permits a more simplified control of the conditions in the various departments. In the old mills, and frequently in new mills, the arrangement shown in Fig. 3 is usually desirable. In this arrangement two or more main risers are used, and the air is distributed by means of diffusers and by location of vent ducts as shown. This arrangement gives perfect distribution at small cost for installation, and has the advantage of a low frictional resistance. In the usual mill construction the air is sufficiently vented through the natural leakage in the building, and through the elevator shafts either to the first floor or to the basement, depending on the design of the building; otherwise registers are easily located. Provision should always be made to allow this vented air to escape outdoors or to return it to the apparatus as conditions may demand. An important feature of this system is the regulation of the proportion of air returned to outside air. In summer conditions, where maximum cooling is required, it is necessary to use a maximum amount of air taken from outside, while in winter a much smaller air volume is required and about two-thirds may be returned to the building. The proportion of air return to outside air determines in summer time the temperature of saturation, and, therefore, the fixed amount of moisture in the air.



LEVATION A-A

FIG. 1.

METHOD OF OPERATION IN SUMMER.

During the warmer weather the humidification of the air is obtained without the use of any source of heat, thereby securing the maximum cooling effect of evaporation and ventilation combined. In humidification the cooling depends upon the amount of moisture which the air will absorb to saturation, while the amount of per cent. humidity after saturation depends entirely upon the temperature.

Following is given a table which shows the average cooling effects that may be obtained in various localities. It should be noted here that the cooling effect by evaporation is exactly equal to the wet bulb depression, i. e., the temperature of the air will drop when saturated to the wet bulb temperature. It will be noted that the air may be cooled from 10° to 15° on the average.

AVERAGE MONTHLY MAXIMUM WET BULB DEPRESSION WITH CORRESPONDING % HUMIDITY

	JULY		AUGUST		SEPTEMBER	
	W. B. Dep.	% Hdt.	W. B. Dep.	% Hdt.	W. B. Dep.	% Hdt.
Columbia, S. C.	15	50	14.5	51	14	50
Charlotte, N. C.	15.5	48	12	57	14	49.5
Philadelphia, Pa.	13	43.5	13	44	12	52
Syracuse, N. Y.	12	55	11.5	54	9.5	59

It should be noted that the humidifying is directly dependent upon the cooling effect. If the temperature is allowed to rise a great excess of moisture is required for humidifying, and the process is thereby made more difficult. On the other hand, if the ventilation is ample to prevent a rise of temperature in the mill, very little moisture need be added to the air and the proper humidity is easily attained. This is the basic principle upon which this system is designed to meet summer conditions. The humidity is automatically controlled by controlling the temperature of the humidified air, upon which it is dependent, as has been shown.

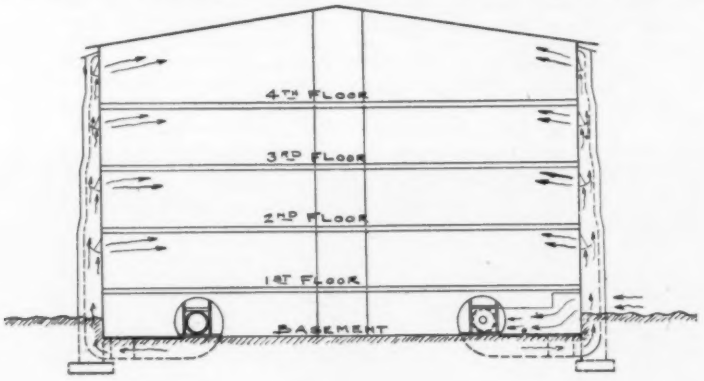
ADVANTAGES OF SYSTEM IN SUMMER.

The results obtained by this method of cooling and humidifying are exactly what would be obtained in cool, foggy weather, by blowing the outside air into the mill in sufficient quantity to keep

the temperature within a certain degree of the outside air temperature. The amount of air which would have to be used to accomplish this would depend entirely upon the amount of heat liberated by the machinery, which is easily determined. This cold, moist air ventilation, the writer believes, is the only method for effectually conditioning the spinning room in the hot, dry weather of summer. It provides for a cooling effect which can be obtained in no other way, and by creating an air pressure within the building it excludes the warm, dry air which tends to lower the humidity. The mill is cooled without opening the windows, in fact, is made very much cooler than it possibly could be made by opening all windows and ventilators. This permits the successful spinning of fine yarns in southern climates, where it would otherwise be impossible, as the air is so introduced that it does not blow lint around the room, nor produce drafts near the floor. The diffuser distributes the air perfectly at low velocities. Humidity and temperature conditions are everywhere uniform.

OPERATION IN WINTER.

The operation in winter is practically the same as in summer except that a considerable proportion of the air is returned from the building to the apparatus, and the heat is disposed of largely through radiation. The fan is also operated at lower speed, as a large volume is not then necessary for cooling. The air is heated after being humidified in the usual manner and the temperature may be regulated independently in each department without affecting the humidity. This result is attained through the use of auxiliary indirect heaters in the rooms, requiring lower humidity and greater amount of heating.



ELEVATION A-B

FIG. II(B)

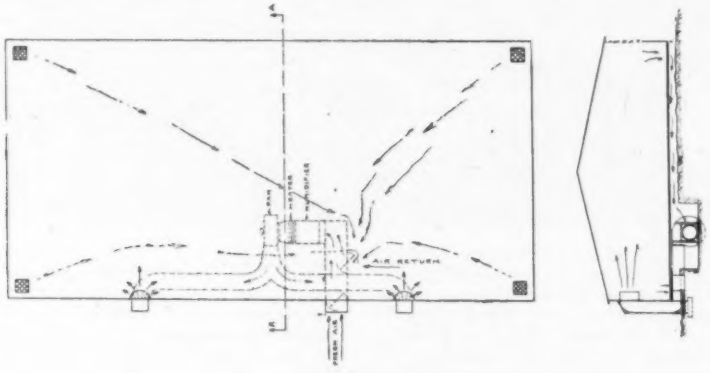


FIG. 3.

ADVANTAGES IN WINTER.

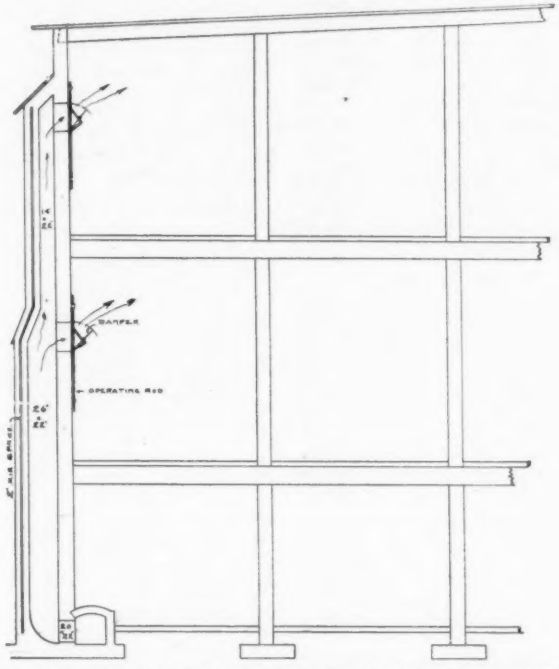
You have been told that the fan system as employed for heating purposes in cotton mills is an attractive proposition on paper, but does not work out well practically. In one respect I must agree with that writer. The fan system as heretofore ap-

plied does successful heating, but is disastrous to the humidity conditions in the mill. The reason for this is apparent. The system as formerly arranged drew large volumes of cold, dry air from outside and blew it hot and very dry into the room. It was, in fact, the most effective kind of a drying plant. The volume and dryness of this air was so great that the humidifiers could not properly cope with the conditions. As a result the humidity was insufficient and very unequal. The heating plant and the humidifiers were working in direct opposition to each other—the one heating, the other cooling—the one moistening, the other drying. Such a mismated arrangement never could be successfully operated only during cool weather. Old plants, however, can easily be remodeled by the installation of a larger fan and putting in additional ducts.

Another considerable advantage in employing this method of heating is that it avoids a great amount of piping strung along the ceiling, which not only is very inefficient in heating, but catches dust and lint which eventually drops off and causes inequalities in the yarn.

DIFFICULTIES.

That there are engineering difficulties to be met with in the installation of this system of cooling



ARRANGEMENT IN THE EAGLE SPINNING MILLS, HAMILTON, ONTARIO.

expected to succeed, and it is no wonder that it placed a system, which is superior in every other respect, in disfavor. When operating in connection with a Buffalo humidifier, however, only sufficient air is taken from outside to create a plenum within the building, and to prevent infiltration of cold, dry air so that a maximum economy in heating is secured, an economy which I am safe in saying is greater than that which can be secured by direct radiation. The air is uniformly humidified before introducing into the room, not afterwards. Thus the humidifying works in conjunction with the heating system and one does not antagonize the other. The circulation produced maintains a uniform degree of humidity in all parts of the room.

This system of humidification may be easily applied to fan systems already installed. However, the size of fan ordinarily used is insufficient to care for summer conditions and the apparatus can be and humidifying is not to be disputed. Somewhat similar systems have been tried and have failed. These failures may be attributed to one or more of the following causes:

1. Humidifier does not sufficiently saturate the air.

2. The temperature and humidity are not properly controlled.

3. Attention is not given to great amount of heat generated by the machinery and insufficient ventilation is provided to care for same.

4. Takes all air from outside, overlooking the fact that the air if too cold will not hold sufficient moisture.

5. Makes no provision for controlling the temperature of the humidified air.

All of the above difficulties have been carefully taken into consideration and avoided.

DIFFERENT HUMIDITIES.

Another apparent obstacle in the way of the successful operation of this system is the obtaining of different humidities in different departments. This disfficulty, however, is more apparent than real. The humidity in the room is controlled just as easily as the temperature. The saturation and temperature of the air at the apparatus are controlled from one room, preferably the spinning room, which is the most difficult to care for. Higher humidities are obtained in the winding room and weave room by providing an increased quantity of air in proportion to the horse power developed, thereby bringing the temperature of the air nearer to the dew point. In the card room, where a lower humidity is desired, the air is shut off until trouble is not experienced by the roving sticking to the cards. Shutting off the air supply effectually reduces the humidity any desired amount, because first, it allows a slight temperature rise in the room, and, second, the decrease in air volume and pressure allows a correspondingly increased infiltration of dry air. This regulation is easily secured and was originally worked out from a practical standpoint rather than a theoretical. The tests given in the second portion of this paper illustrate this condition.

HORSE POWER TO MOVE AIR.

During the winter time the heating plant is operated with only 30 per cent. of the power required in summer. Where motor drive is employed it is usual to operate the fan at three different speeds; the maximum speed for extremely hot weather; a minimum speed for cold weather, and a medium speed for mild weather. In a 10,000 spindle mill, 35 horse power will be required for the maximum speed; 11 horse power for the minimum speed and about 23 horse power for the medium speed, making an average for the entire year of 23 horse power for a 10,000 spindle mill, for heating, humidifying and cooling. To offset this, the average output of the mill may be increased fully 5 per cent.

The principal advantages of the system are:

1. Humidifies and cools the air before, not after, entering the room.
2. No dependence on uncertain and insufficient air leakage in and out of the mills for cooling effect.
3. Humidified and cooled air delivered to work rooms under slight pressure, and so as to avoid drafts. Inward leakage of hot air in summer and of cold, dry air in winter thereby prevented, an essential feature for uniform humidity and temperature conditions.
4. Cools the rooms without opening windows in summer, thereby avoiding window drafts—disastrous to fine yarns.
5. The one system cools the spinning room within 5° of outside temperature in summer, insures uniformly heated and regulated temperature in winter, maintains and controls the humidity in all parts of mill at any desired degree both winter and summer.
6. The apparatus is located centrally, permitting each department to be controlled from one point at the apparatus, or at each room as preferred. One man can easily care for the entire humidifying, cooling and heating equipment.
7. Working of apparatus always visible; sprays, easily accessible; exceedingly simple; nothing to get out of order. Spray water may be easily recirculated without filtering. Requires but little attention.
8. Humidity controlled at any desired per cent. The control is automatic and of great simplicity.
9. Permits large portion of air to be recirculated when heating in winter, thereby effecting great economy.

Following are tests made on this system of humidifying and humidity control. The first two tests were made at the Chronicle Mills at Belmont, N. C. This is a two-story 5,000-spindle mill. On the lower floor is the picker room, the card room and winding room, which is separate from the rest of the building. On the upper floor is the spinning room proper. The cubical contents of each floor is about 170,000 cubic feet. The humidifier was installed in connection with a Sturtevant heating system, which is somewhat too small to secure the best results in hot weather. It, however, operates very satisfactorily during the cool, dry weather of fall and winter.

TEST OF BUFFALO HUMIDIFYING SYSTEM AT CHRONICLE MILL, BELMONT, N. C.

	TEST NO. 1 DEC. 7, 1906			TEST NO. 2 DEC. 27, 1906		
	9.30 a.m.	12 m.	3 p.m.	2 p. m.	3 p.m.	4 p.m.
1	44.5°	51°	52°	48°	48°	48°
2	36	39.5	40.5	47	47	47
3	40%	31%	30.5%	95%	95%	95%
4	1.33	1.35	1.40	3.6	3.6	3.6
5	71°	70.5	70.5°	71	71°	71
6	70	69.75	69.5	70	70	70
7	96	97	96	96.5	96.5	96.5
8	7.85	7.75	7.7	7.85	7.85	7.85
9	71	72	72	73.5	73	73
10	79	80.5	81	80	79.5	79.5
11	69	70.5	70.5	71	71	71
12	63	63.5	63.5	65	65	65
13	72	72.5	72	72	72	72
14	66	67	67	68	67.5	68
15	62%	61%	61.5%	63%	64%	64%
16	70	69.5	69	69	70	70
17	84	83	83	87	86	87
18		25,000			25,000	
19		19			19	

1. Outside dry bulb temperature.
2. Outside wet bulb temperature.
3. Per cent. humidity outside.
4. Grains of moisture per cubic foot of outside air.
5. Dry bulb temperature of air leaving humidifier.
6. Wet bulb temperature air leaving humidifier.
7. Per cent. humidity air leaving humidifier.
8. Grains of moisture per cubic foot of air leaving humidifier.
9. Dry bulb temperature card room.
10. Dry bulb temperature spinning room.
11. Dry bulb temperature winding room.
12. Wet bulb temperature card room.
13. Wet bulb temperature spinning room.
14. Wet bulb temperature winding room.
15. Per cent. humidity card room.
16. Per cent. humidity spinning room.

17. Per cent. humidity winding room.
18. Cubic feet of air per minute.
19. Water power to operate fan and pump.

It should be noticed that the above tests were taken on days of extreme weather conditions. The first test was taken on one of the driest days in the month, while the second test was taken during exceedingly high humidities, when conditions are usually considered most favorable.

The third test was made at the Eagle Spinning Spinning Mill, Hamilton, Ontario. This mill was supplied with new apparatus throughout, the layout for which is shown in diagram. The results of this test were as follows:

MARCH 4TH, 1907.

	9 A. M.	12 M.	2 P. M.	4 30 P. M.
1	29°	35.5°	38°	36°
2	27	31	32.5	32
3	75%	61%	48%	65%
4	1.4	1.5	1.5	1.6
5	67	67.5	67.5	67.5
6	66	66.5	66.5	66.5
7	7.00	7.1	7.1	7.1
8	73°	74°	74°	74°
9	77.5	79	80	79
10	64.5	65	65	65
11	69.5	70.5	71	70.5
12	61%	60%	60%	60%
13	67.5	66	65	66

1. Outside dry bulb temperature.
2. Outside wet bulb temperature.
3. Per cent. humidity outside.
4. Grains of moisture per cubic foot of outside air.
5. Dry bulb temperature of air leaving humidifier.
6. Wet bulb temperature of air leaving humidifier.
7. Grains of moisture per cubic foot of air leaving humidifier.
8. Dry bulb temperature card room.
9. Dry bulb temperature spinning room.
10. Wet bulb temperature card room.
11. Wet bulb temperature spinning room.
12. Per cent. humidity card room.
13. Per cent. humidity spinning room.

It is to be noted that in the above tests proper humidity was secured in each of the rooms independently. Both of these mills were operated with automatic regulation for the spinning room, other rooms being controlled by hand regulation.

Meeting of the National Association of Hosiery Manufacturers, Phila., Pa., May 13 and 14.

The 1907 convention has passed into history as the most successful event in the record of the knitting industry. Both in the number of delegates in attendance, the importance of the discussions, and the general interest taken in them, there is reason for congratulating the officers of the association for preparing such an attractive program, and carrying it through successfully.

The exhibition was most successful, showing a marked improvement over the year before. The number of exhibitors was larger, and more representative, and the character of the exhibits of more direct interest to the trade. Being so conveniently located near the Continental Hotel, which was the headquarters of the convention, and on Chestnut Street, one of the main thoroughfares of the city, it was constantly thronged with interested visitors. In the evening the exhibition hall was sometimes packed, and it was interesting to note among the visitors many operatives from the mills about the city, as well as the manufacturers, showing that they, too, took an interest in the new machinery shown.

The hall was attractively decorated. It was difficult to get a photograph giving a good idea of the exhibition. The one presented does not do it justice. It only shows a comparatively small portion of the large room.

There was a good deal of actual business done at the exhibition, and the exhibitors expressed themselves as highly pleased with the results. A prospective purchaser has never before had so good an opportunity to see a great variety of machinery adapted for all sorts of purposes at one place, and capable of demonstration, with so little loss of time.

The first session was called to order Monday morning at 10 o'clock, President F. L. Chipman in the chair. There was a large attendance of members, much larger than at any other previous meeting of the association.

Reading of the minutes of the last meeting having been printed, was dispensed with.

The President's report, which was principally of an executive nature, discussed questions of vital interest to the members, but of such nature that publicity is not desired for obvious reasons. President Chipman made many valuable suggestions which will be acted upon and presented for consideration at future meetings.

F. L. CHIPMAN, EX-PRESIDENT NATIONAL ASSOCIATION OF HOSIERY MANUFACTURERS.

Then followed Secretary Carter's comprehensive report for the work of the past year, showing a large increase in membership, and giving evidence of active work on his part, and at the conclusion of his report a vote of thanks was passed in appreciation of his efforts.

Mr. Fred. W. Simons then delivered an address on the value of association work.

Association Work.

BY FRED W. SIMONS.

Association work, what is it? Probably the question uppermost in the mind of most of us at the present moment is the question of selling our product, and the problem of making a profit. Is the consideration of these questions Association work? I think so. Of course the Association is not a selling agency, most likely it never will be, and perhaps we cannot have a selling agency officially connected with it; but discussion of methods of selling with a view to selecting the best method is certainly Association work. We ought to give much consideration to it; in fact it is the most important question we can possibly consider. Gentlemen, there's something the matter with the selling end of our business.

If we only got enough money for our goods, if we only had a legitimate return on our investments and decent compensation for our work, all the rest of our grievances would be quite endurable. But why can't we get it? What is the trouble? Who is to blame? It is puerile to blame general conditions and to say it is owing to circumstances over which we have no control. We must find out how to change the conditions and how to control the circumstances. It is equally ridiculous to place the blame on our customers. There is not a merchant in the world whose trade is worth having who does not buy his merchandise as cheaply as he can; and if you knew a jobber who was habitually paying 5 per cent. more for his goods than his competitors where paying, you would think him incompetent, and would be afraid to sell him.

Who then is to blame for the fact that we don't get remunerative prices for our goods, except ourselves? How is the trouble with our selling end to be remedied? I can't tell you, and if I could you would think I was "talking through my hat;" but get together and talk is over, and when you are not together, think it over; and if you think your think amounts to anything send it to the Secretary or to some of the officers of the Association; that's Association work.

I don't mind saying in connection with the question of selling, however, that it appears to me a ridiculous proposition that 500 manufacturers whose output is taken by 500 jobbers should need 500 selling agents to do their business. I don't like the method now in vogue of selling our product anyway; but if the selling agent is a necessary evil, at least let us reduce the evil to its least common denominator. Cut the thing down at least 90 per cent. Fifty selling agents instead of five hundred would simplify matters a good deal. There is a general idea that it is policy to keep as far away from your direct competitors as possible, and the first thing a manufacturer asks a selling agent who applies for his line is, whose goods are you selling? Have you anything that conflicts with my line? And if the agent can't show that he does not have a competitive article the manufacturer does not want the salesman.

I think that it is all wrong, gentlemen. Take my line, for instance, of ladies' 200-needle goods, or 176-needle half hose. Suppose the whole product of such goods was sold by four or five agents instead of forty or fifty agents; would it not be much easier to control the situation?

Then, apart from the consideration of methods of selling, and yet closely akin thereto, is the question of values. What ought we to get, and what can we get for our goods? There's a problem for you. There are nuts to crack and plenty of them; good old hard-shell fellows that you can easily break your teeth on if you are not careful, and more than that, you can crack up the Association instead of cracking the nuts if you go the wrong way about the job. Yet I hold that the consideration of values is Association work.

We can't fix prices and we had better not try, but we can discuss values, either by specially appointed committeemen in conjunction with the officers and executive committee, or by the convention going into committee of the whole, then advising all members of the Association what the results of their deliberations are. Of course the resulting figures would not be binding upon anyone, but they would be of value to many members as being the official opinion of the Association, and would be at least some indication as to what their goods should bring. At present many manufacturers have nothing to indicate the condition of the market except the statements of their selling agents, and the selling agent usually has nothing to report to him except bargain counter news and how that such and such a manufacturer sold ten cases at such and such a figure and so on.

I say then that the discussion of values may properly be regarded as Association work, and I think if we can agree on the prices that goods really ought to bring, not prices that we know there is no possible chance of getting, it will be of great assistance to many of our members and will have a healthy effect on the market.

There are a few men in the business who seem to take a delight in slashing and varying the market; and without any apparent reason except just to have the satisfaction of under-selling everybody else. But there are not many of them; there are not many who can do it.

There are but few manufacturers who do not get all they can for all their goods, or at least who do not believe they are getting all they can get for them under the circumstances. I think that is a fair assumption. I think it is fair to assume that there are few if any of us who sin against the light to the extent of selling goods for less money than we think we have to sell them for.

Could not the Association devise some method whereby the dumping of goods on the market at prices below their intrinsic value could be prevented? In busy times like the present there is not so much of it done, but in normal times, and particularly in times of trade depression, there is a great deal of it done, enough to influence the entire market and to depress prices. Here is a problem the solution of which would be Association work.

In short, gentlemen, Association work is any work that can be done better by co-operation than by individual effort, and I think the greatest benefit that we shall derive from holding these annual meetings will be that they will better qualify us for acting together. The more we know of each other, the better we know our competitors, the better we know our own business.

Competition may be a good thing, but you can have too much of a good thing. We have been told so often that "competition is the life of trade" that we have come to believe it, and it may be true; but it is equally true that competition is too often the death of the trader, and while I am not asking quarter from any man I can assure you, gentlemen, that I take no pleasure in the failure of a competitor.

The reports from the grievance, transportation, membership and press committees were indefinitely postponed.

This completed the work of the morning session.

AFTERNOON SESSION, MONDAY, MAY 13.

At the afternoon session a motion was made and enthusiastically seconded that a voluntary subscription should be taken to purchase a loving cup and tea set in appreciation of the services of the president.

The report of the cost accounting committee was postponed until Tuesday.

J. Lee Nicholson, President American Cost Accounting Company, of New York City, then delivered an address on "Cost Accounting."

The Executive Committee's Report then followed.

Report of Executive Committee.

J. McPhail: We would again call your attention to the good results that have followed the establishment of permanent headquarters in Philadelphia. The growth in membership, the interest and enthusiasm of the members, and the general interest manifested by the hosiery mills throughout the country in our association indicates that the year's work has been productive of the best possible results. While your secretary-treasurer naturally would have liked to increase the membership to even greater proportions than at present, yet when you consider that the membership has increased 275 per cent. since our last meeting, we are one and all highly pleased with the results accomplished.

COST ACCOUNTING.

Your secretary advises us that in his travels among the hosiery mills of the country, practically every mill has taken deep interest in the movement towards the dissemination of accurate information on the subject of cost finding. Our members realize that the fact that some of their competitors are misinformed or ignorant of the true cost of manufacture and distribution is proving as disastrous to their interest as though they themselves were unfamiliar with the true conditions along this line. For various good and sufficient reasons the cost accounting committee appointed at our last convention have been unable to formulate a proper report during the year, but the subject will be taken up fully at this convention and it is our sincere hope that a proper report shall be presented and adopted which may be presented to every hosiery manufacturer in the country. Especially is this important at the present time on account of the greatly increased cost of raw material of all descriptions, mill supplies, labor, etc. We have invited J. Lee Nicholson of the American Cost Accounting Co. of New York City to appear before this Convention and deliver an address on the subject of "Cost Accounting." This address by Mr. Nicholson, in connection with a report from the cost accounting committee, should have your very best attention.

STANDING COMMITTEES.

We would call your attention especially to report of the legislation committee, which will be supplemented by an address by Wilbur F. Wakeman, treasurer and general secretary of the American Protective Tariff League. He will bring to your attention the proposed change in tariff on German imports. The administrative policy that has been submitted to the German government appears very dangerous to the American hosiery manufacturers, and we recommend this important subject to your special consideration. The proposed change as it now appears on the surface will effect our full fashioned manufacturers directly, but it will prove equally disastrous to the seamless manufacturers, for a reduction of values on full fashioned goods will affect in a similar manner the seamless manufacturers.

The conditions which confront the hosiery manufacturing business have not developed in a day, a month, or even a year. We must, therefore, not expect that our Association, no matter how strong, can bring about the reorganization of these conditions in a short time. Even though we were numerically strong enough and represented practically the entire production of the United States, we would be unable to force an issue on many of the subjects we have before us. We must proceed carefully and cautiously, and refrain from openly or directly antagonizing the interest of those we can serve.

A suggestion was made that the members of the association should use on their stationery a stamp indicating membership in the association, but after some discussion this was voted down.

Then followed a discussion of the best plan for collections, and it was voted that a committee of three should be appointed by the president to report at a later meeting.

MORNING SESSION, TUESDAY, MAY 14.

The Tuesday morning session opened with a discussion of the problem of cancellation evils by jobbers and manufacturers. This subject aroused much interest and was very freely discussed by many members on the floor.

The subject of cartage was also discussed as well as that of special labels, bands, boxes and stamps.

Then followed a report read by the Secretary from the legislative committee.

Report of the Legislative Committee.

A few months ago upon the expiration of a commercial treaty with Germany, that nation seized the opportunity to attempt to force from the United States a modification of our present tariff schedules upon a number of articles, the manufacturing of which gives employment to vast numbers of her workmen. It is needless to say that hosiery occupied a conspicuous place in the minds of German diplomats. Only a year or two previous to this, the French government had induced the administration to submit a reciprocity treaty to the Senate for ratification, and which was a practical annulment of our high tariff rates on all classes of hosiery. A few hosiery manufacturers to whom we all feel greatly indebted, saw the danger in the prospective competition with the pauper paid labor of the old country and added their influence and efforts to the movement in opposition and succeeded in inducing the Senate to reject the treaty.

Remembering the fate of the French treaty, the administration declined to enter into reciprocal relations with Germany, whereupon the German Government announced its intention of waging a tariff war against this country. Diplomatic negotiations on the part of our state department succeeded in having the Germans, by act of February 26th, last, grant the United States, until June 30th, 1907, the tariff privileges which were accorded by treaties to other favored nations, not, however, without material concessions on our part, which, in their way, amount to a practical annulment of a portion of our present tariff. This was accomplished through modification in the method of executing our Administrative Customs Laws covered by orders issued by the Treasury Department on February 28th, two days after the passage of the German act mentioned above, granting an extension of tariff privileges to this country.

These orders are as follows:

To the President of the Board of General Appraisers, New York City.

Sirs: You are hereby directed that in reappraisement cases the hearing shall be open and in the presence of the importer or his attorneys whenever in the judgment of the Board the public interests will not be prejudiced thereby.

Leslie M. Shaw, Secretary.

The other orders are as follows:

Confidential Agent U. S. Treasury Department, Berlin, Germany.

Sirs: In conducting investigations for purposes of discovering market value or cost of manufacture of merchandise produced within your district, you are directed first to confer with Chambers of Commerce and other trade organizations and to report to this department all information by you derived from these sources, together with price lists submitted and approved by such organizations.

Leslie M. Shaw, Secretary.

If these two orders were not issued as a direct result of the German threat to wage a tariff war, why were they not issued long ago, and for what specific purpose does the Treasury Department issue such orders at this late hour in the life of our present tariff laws? Your committee predicts that the first of these harmless, innocent-appearing orders will be the means of undervaluing thousands of dollars of German hosiery which will pour into this country during the next two years. Your committee firmly believes that the German government had especially in view an invasion of our hosiery market at the time these negotiations were pending. It must be remembered that for months the workmen in the hosiery mills of Germany have been on a strike and that the business of manufacturing has been at a practical standstill at Chemnitz for some time. The gradual loss of the American market to Germany, caused by our ability to produce a satisfactory home-made article, has materially affected the German trade and resulted in a reduction of wages to German workmen, forcing them to emigrate to America, go on strike, or accept wages which would enable the manufacturer to get into our market in spite of our tariff schedules.

The unrest prevalent among these textile workers and their evident tendency toward socialism were a constant menace to the peace of the German nation and its reigning house.

Our present tariff rate on foreign hosiery is as follows:

Hose valued at
$1.00 per doz.— .50 per doz. and 15% ad valorem
1.50 per doz.— .60 per doz. and 15% ad valorem
2.00 per doz.— .70 per doz. and 15% ad valorem
3.00 per doz.—$1.20 per doz. and 15% ad valorem
5.00 per doz.— 2.00 per doz. and 15% ad valorem

This tariff should be considered in connection with the fact that the workman of Germany, for the twelve greater common employments of labor, for one hour's work receives approximately 12c. against 35c. paid by employers of labor to the workmen of this country, or a difference against the American employer of 191 per cent. That our new methods of appraising hosiery importations is proving entirely satisfactory to Germany is evidenced by the fact that the mills are no longer idle and the demands of the workmen for increase of wages have been granted and by the further testimony of our U. S. Consul at Chemnitz who in a recent official reply to the State Department uses the following language:

"In the hosiery branch of textiles the outlook was never better than the present. The only cloud was the prospective tariff difficulty. If a 25 per cent. additional duty had been imposed on hosiery by the United States, exports would have dropped lower than in any preceding year. Otherwise more German hosiery will go to America than ever before. The German manufacturers were nervous about the situation and flooded the consulate with inquiries on the points at issue."

But the strongest evidence that the German

diplomat was vigorously looking after his hosiery interests is found in the fact that the new German tariff accorded us until June 30th, 1907, out of an immense list of articles for taxation reduces rates on the following articles only:

Dyewood extracts from 71c. to 48c.
Knitting machines for hand power, $5.71 to $2.86.
Knitting machines for motor power, $5.71 to $1.90.

On everything else the rate remains the same or is advanced materially.

We all know the hand machine methods employed by our German competitors. It does not seem strange to an American hosiery manufacturer that Germany should take steps to increase her productions and exportation of hosiery, but it does appear strange that the American manufacturer should not be permitted to furnish the home market with all of its full fashioned hosiery and by so doing give employment to additional skilled labor and furnish a better article at living prices. This matter, taken in connection with various attempts to meddle with the present tariff schedules, is of so much importance that your committee recommends that the committee on statistics be required to ask the Treasury Department to collate statistics of a comparative nature covering all future importations of foreign hosiery and keep them henceforth for the information and protection of the hosiery manufacturers of the United States.

It may possibly be wise to make some change in a few of our tariff schedules covering some articles manufactured in this country, but your committee feels sure that if this great question is seriously agitated in the near future, it will cause capital to become timid, credits to contract and general confidence in the future home market to be shaken. It will create doubt among financiers, impair and retard investments, and eventually result disastrously to hosiery manufacturers as their interests will be among the very first to be sacrificed on account of their heretofore weak and unorganized condition, and for the further reason that they give employment largely to boys and women who do not vote.

Your committee believes this organization should discourage tariff tinkering of any kind. Let the business interests of the country continue to rest in peace until a general tariff commission is created, which can carefully study the question, equalize conditions, right wrongs and forever remove this great business disturber from the pale of politics and the manipulation of irresponsible political demagogues.

Since the foregoing was written, the Washington government has negotiated with Germany an agreement of an alleged reciprocal nature, the operation of which will result in the very action predicated in the report. A special committee composed of tariff experts was sent to Germany, with instructions to make full report and recommendations regarding concessions to Germany, the character of which would cause that country to refrain from imposing her maximum rates on American importations. The final report of this commission has not been submitted, but enough progress has been made to indicate the trend of their recommendations.

In brief, the United States is to withdraw from Germany all of our special agents at present employed in reporting upon the real value of exports to America. Our customs officials, as well as our foreign consuls, are to accept the statement of German Boards of Trade or Chambers of Commerce as to the export or original value of goods. In addition to the above, all appraisements of merchandise at American ports under the Dingley tariff law, are to be made (when open hearings are had as to real value), in the presence of the importer.

In other words, the present purpose of the Government seems to relieve the pressure from German sources, not by amending the present tariff law, but by letting down the bars in the method of administrating that law. All of these matters will eventually be brought to the attention of the Senate finance committee, which, it is rumored, will soon hold a special session.

At the meeting of the finance committee, hosiery manufacturers should present their case, backed up by statistics covering American output and foreign importations. At present the concessions made to Germany will affect only the fullfashioned hosiery manufacturers, but once this growing branch of our business has been exterminated, the German manufacturer will not be slow to enter into competition for control of our seamless market. The whole situation is full of danger to our domestic manufacturers, and if some vigorous action is not taken at once, our Association will awaken later, to find that the cream of their industry has been sacrificed for the interests of some other American industry, which has been more alert and keener than we have been in promoting its interests, both at home and abroad.

We should take the broad American stand that our industries as a whole, and particularly the weaker ones, to which class we may perhaps belong, should be carefully and uniformly protected, and thus preserve to the American wage earner, as well as to the home manufacturer, our splendid home market, with its high wages and excellent standard of living, a market which has an accelerated growth, due alike to a more cultured citizenship, and the incoming of a million immigrants annually.

In spite of numerous strikes and lockouts during the last two years, the Chemnitz market has done much to supplant home-made hosiery, as evidenced by the following figures:

Exported from Chemnitz to U. S. in 1905	$8,229,293
Exported from Chemnitz to U. S. in 1906	10,711,914

Increase in one year $2,482,120, or over 30 per cent. These figures, studied in connection with the report submitted at the last session of the Association, should serve to arouse our home manufacturers.

For the immediate preservation of the full fashioned feature of our business, prompt action looking to a vigorous presentation of our case to the constituted authorities is urgently recommended.

Mr. Lamb, a former President of the Association, then presented to President Chip-

man the loving cup and tea set in a graceful speech which was feelingly responded to by Mr. Chipman.

AFTERNOON SESSION, TUESDAY, MAY 14.

The afternoon session of Tuesday was opened by Mr. J. N. McPhail's report on "Cost Accounting."

Then followed a discussion on net weight yarns, which was, perhaps, one of the most animated of the executive discussions. It was voted that a committee of three be appointed to wait on a committee of the Spinners' Association with a view to endeavoring bringing about an understanding as to the weight of yarn, and that in case this could not be brought about, the committee should draw up a form of contract, submit same through the secretary to the members of the association for approval, the association then to use this contract regardless of whether the Spinners' Association agreed with the Hosiery Association.

This completed the afternoon session.

MORNING SESSION, WEDNESDAY, MAY 15.

The first business of this session was reading a report

Report of Committee on Children's Ribbed Hosiery.

Mr. Withers: I am glad to say that we have formed an auxiliary association for the manufacture of children's hosiery, it makes no difference whether ribbed or not. We have elected a permanent chairman and secretary-treasurer for this subdivision. Our dues are $15. Our idea is to gain information of all kinds from each other. You do not have to give any information. We bind ourselves to nothing except that we trust the members will answer such questions they are asked and which they deem are reasonable and right they should answer.

The following reports were then made:

Report of Committee on Men's Half Hose.

Mr. Lamb: We are pleased to report that we are thoroughly organized and will endeavor to be of great assistance to one another, with the exception of the exchange of samples. Our membership is quite large, taking everything into consideration. We hope to increase it. We are going to get in all the half hose members of the association. We are very sanguine of success. If we knew what our competitors were asking it would have the tendency to raise the prices all along the line. I think you will find when we meet again that the half hose manufacturers will report a very satisfactory year. Time will show.

Report of Committee on Seamless Hosiery.

The President: I am very much gratified with the work accomplished. While we did not form a permanent organization, the present status of our business not permitting, we became very much better acquainted, and I think coming here to the convention has done good in more ways than one. No permanent organization has been formed, however.

Report of Committee on 84-Needle Manufacturers.

Mr. Carr: We met yesterday and were very much interested. But that is not all. We agreed on a special meeting for next fall. We have learned a lot from one another, and feel we can learn more. We found that we were all selling too low. We have been mutually benefited. We will meet again next fall to see if we cannot gain more knowledge and be of more help to each other.

Following these reports came

The Tariff Relations with Germany.

BY WILBUR F. WAKEMAN,
Secretary of the American Protective Tariff League.

The new tariff agreement (not treaty), with Germany will go into effect on July 1, 1907. I have received many letters to the effect that this agreement will necessarily require ratification by Congress. This is incorrect. It is true that the agreement carries with it the promise by the Administration of certain recommendations to Congress at its next session, but the Administrative features of the agreement will become operative on July 1st. A brief analysis of the German agreement which has just been approved by the Reichstag is as follows:

THE ESSENCE OF THE AGREEMENT.

1. Acceptance of German export prices on commodities imported into the United States.

2. The making of special agents of the Treasury Deparment, who shall investigate questions relating to wholesale prices and cost of production of merchandise for export to the United States diplomatic agents accredited directly to the German government and subject to the rule of international conduct known as persona grata.

3. Open hearings on questions relating to alleged undervaluations of imports from Germany, in all cases where the Board of Appraisers at our custom offices shall so elect. In any case the importer shall be furnished with all evidence that was used in the closed hearings to aid such importer or agent of an exporter to make up his case of defence in final hearings.

4. The proposed recommendations to be made by President Roosevelt to Congress to induce our legislative body to consent to changes in our cus-

toms administrative law, whereby penalties for undervaluations shall be greatly relaxed in the interests of the importer, and a greater leeway furnished through the proposed changes in the law, for undervaluations of imported commodities, up to 10 per cent. in some instances.

5. The concessions given to Germany under Section 3 of the Dingley tariff law, including a reduction in duty on German champagnes imported into the United States, down to the final limitation of that section, being a lower rate than is at present granted to any country except Portugal.

Let us for a moment examine the negotiations for and the culmination of this agreement before we take up the merits or demerits of the German concessions. The agreement was negotiated in secret. I do not know of a single American producer of any class who was called into consultation as to its effect upon his industry. Is there anyone here present who was summoned to Washington in this connection? Do you know of any woolen manufacturer, pottery manufacturer, glass manufacturer, or silk manufacturer who was consulted?

On the other hand, the German ambassador sailed for home on April 11th with this agreement in his pocket. It is submitted to his Government. It is then submitted to the Economic Association of Germany and approved. It is then submitted to the various legislative committees and approved, and only yesterday it was approved by the Reichstag. How different the policies of the two countries! By our Administration no producer or manufacturer was consulted, and in Imperial Germany every industry, every branch of legislation, approved the agreement before it is promulgated.

As you know, the great enemy of American industrials has been undervaluation and wrong classification of imported merchandise. I know whereof I speak, for my opinion is based on five years' experience as United States Appraiser at New York, and during that period I had more difficulty with the undervaluations from Germany than from all other countries.

Daniel Manning, when Secretary of the Treasury, said that the revenues were defrauded at the port of New York to the extent of at least $40,000,000 a year. What portion of that applied to Germany I do not know, but you can figure out the percentage from what I have said.

During the second Cleveland administration great efforts were made to put a stop to undervaluations and an agreement between competitive nations was submitted in effect as follows:

That consular invoices of exported merchandise from any of the countries should be sworn to before a local magistrate within the consular district from whence the merchandise was exported. The negotiations continued for almost a year and at the end of that time the United States, France, Italy, Switzerland, Great Britain and, I think, Austria, had accepted this condition. The only great exporting nation which refused to consent to this manifestly fair practice was Germany. In nearly all countries perjury is a serious crime and especially so within the German Empire. The refusal of this country to accept this condition further proves the policy of that country regarding her exports.

It is also proposed in connection with this agreement that the American consul shall accept the certificates (not sworn to) of the local Chambers of Commerce as to value in the issuance of the consular invoice. It is also agreed that these certificates or statements of the local Chambers of Commerce shall be accepted as evidence by the United States Customs officials. Only one result can be anticipated; namely, that the German manufacturer or exporter will be the appraiser of his own merchandise.

The Treasury Department has a number of special agents on the Continent for the purpose of investigating the question of undervaluation or wrong classification. These agents hereafter will be accredited directly to the German Government through our State Department and will have to remain persona grata, or become persona non grata and return home. That is, all investigations of the Treasury Department abroad will be practically under the control of the German Goernment. You who are familiar with German export customs methods will realize what this means.

Regarding open hearings before the Board of United States General Appraisers, this is not so important a point, for it may prove to be a two-edged sword. Naturally when the honest importer gives the treasury agent information as to values of foreign merchandise he does not wish to be quoted and does not wish to appear before the Board of United States General Appraisers to be catechised by the importers' lawyer as to his business and business methods. The effect of this agreement will be that the Government will find it very difficult, even if desired, to obtain information as to undervaluations.

The promised recommendation by the Administration to ask Congress to amend the Administrative Act and give 10 per cent. leeway before any penalties apply, shows the disposition of the Administration, but I do not believe that Congress will adopt this provision. Understand, please, what this means. Under present law if an invoice is found to be undervalued 5 per cent., 5 per cent. is added to the value and 5 per cent. is added to the duty penalizing the undervaluation. To illustrate: Suppose an invoice is of value $100. Duty on the merchandise, say, is 50 per cent. It is found that the foreign value of the merchandise is $105; consequently the duty on this $100 would amount to $57.75 instead of $50, according to the invoice value. We had this very condition, which is now recommended, in the Wilson German tariff. It was a failure and Congress knows it.

Actual concessions in connection with the rates of duty under Section 3 of the Dingley act are undoubtedly legal. The most important point is the reduction of duty on sparkling wines of $2.00 per case. As applied to Germany, this is not important, but certainly France, which has always been on friendly relations with this country will seek the same concessions, and in fact has already asked for them. Imports of sparkling wines from Germany are small, but from France they amount to over $6,000,000 a year and this provision will cause quite a serious loss in revenue and undoubtedly affect our wine producers greatly.

The German tariff concessions will have a very depressing, if not serious, effect upon many industries and naturally similar concessions must be extended to other countries which enjoy "the most

favored nation" treaty clause. Applied to all nations whose products compete with our own, the German agreement means general tariff reduction by administration rather than by legislation.

Referring generally to this agreement, what are you going to do about it? I realize that many of you are sold up for this year, some of you are sold up for next July, and there are some people I know who are sold up for the entire year of 1908, but when you go to making your contracts in November and December, you will find the effect of this agreement. You may not wake up to the situation until that time. I hope that every one of you who is interested in this industry will carefully study this agreement and obtain the best information he can as to the effect. I do not wish to discourage any machine men who happen to be here, or anything of that kind, but my advice here—and we get reports from as many concerns as any one organization in this country—my advice is go slow—go slow. If you intend putting in 100 extra machines—go slow. If you intend to build additions to your plant—go slow. Find out what is going to be the effect of this agreement. Be liberal in your judgment. I would not come here and say what I have said unless I was a friend of this administration.

Only yesterday I had the chairman of the executive committee of the National Pottery Association at my office. I asked him what is going to be the effect of this agreement. Of course you do not care much about potters, but you all ought to care to take care of each other in this line of protection. (Applause.) There is a great lack of this spirit. A hosiery man comes in and thinks of nothing but his own industry; he is a busy man, enjoying splendid prosperity, but does not think of the fellow who is not so prosperous. He does not think of the pottery manufacturers, the glass people, enamel ware people who, even under the present conditions, find it almost impossible to exist in any lines. This man replied, "Mr. Wakeman, if we can't reduce our wages by 25 per cent. we have got to shut up the potteries." That is the effect—18,000 people shut out. You have 100,000 people. You come next. So in all lines. I repeat, go slow.

The following resolution was then adopted:

Resolved, that the Secretary of the Association be instructed to furnish the American Protective League with a list of the members and ask the League that such literature they deem advisable be forwarded to the members in regard to joining the League and getting the benefits of that Association,

The election of officers was then held and resulted as follows:

President, Joseph S. Rambo, Norristown.

First Vice-President, Thomas W. Buck, Philadelphia.

Second Vice-President, Fred Simons, Frankford.

Secretary-Treasurer, C. B. Carter, Philadelphia.

Executive Committee, J. H. McPhail, Nashville; M. S. Gabriel, Coopersburg, Pa.; Julian Carr, Jr., Durham, N. C.; George B. Pfuigst, Philadelphia.

Advisory Board, Harold Lamb, Union Point, Ga.; and F. L. Shipman, Easton, Pa.

List of Exhibitors.

1. Roessler & Hasslacher Chem. Co., New York
2. National Automatic Knitter Co., Philadelphia
3. Scott & Williams, Philadelphia
4. O. F. Zurn Co., Philadelphia
5. Paxton & O'Neill, Philadelphia
6. Smith, Drum & Co., Philadelphia
7. Salvator Transfer Co., New York
8. Wilkins Transfer Co., New York
9. Hemphill Mfg. Co., Pawtucket, R. I.
10. Boss Knitting Machine Co., Reading, Pa.
11. Merrow Machine Co., Philadelphia
12. Textile Manufacturers' Journal, New York
29. R. Greenwood & Bault, Philadelphia
30. Lord & Nagle Co., Textile World Record, Boston
31. Nevershrink Process (Chas. H. Heyer), Philadelphia
32. E. F. Houghton & Co., Pawtucket, R. I.
33. Wilfred Wells, Philadelphia
34. C. J. Jones, Philadelphia
35. Kaumograph Co., New York
36. Manufacturers' Supplies Co., Philadelphia
37. Jacob K. Altemus Machinery Co., Philadelphia
38. E. Jenckes Mfg. Co., Pawtucket, R. I.
40. Beckert Needle & Supply Co., Philadelphia
41. Wm. H. Rau, Philadelphia
42. Hansell & Brown, Philadelphia
43. Cigar Stand.
44. Wm. Steele & Sons Co., Philadelphia
45. Harding & Fancourt, Philadelphia
46. Robert A. Wright, Philadelphia
47. Wilmington Oil Co., Wilmington, Del.
48. All Around Philadelphia Auto Co., Philadelphia
49. Geisenheimer & Co., New York
50. Foster Machine Co., Westfield, Mass.
51. American Cost Accounting Co., New York
65. S. F. Bowser & Co., Ft. Wayne, Ind.
66. Vacuum Dyeing Machine Co., Chattanooga, Tenn.
67. L. J. Wing Mfg. Co., New York
68. L. P. Clark & Co., Philadelphia
69. Standard Sewing Machine Co., Cleveland, O.
70. Nicetown Dye Works, Philadelphia
71. Standard Machine Co., Philadelphia
72. The Credit Office, New York
73. C. B. Carter, Philadelphia
74. Keystone Telephone Co., Philadelphia
75. Bell Telephone Co., Philadelphia
76. Philadelphia Drying Machine Co., Philadelphia

Exhibits at the Hosiery Manufacturers' Association.

The Wilmington Oil Co., Wilmington, Del., showed samples of their White soluble oil and "Gozoil" and demonstrated their merits as softeners for hosiery and underwear.

The Kaumagraph Co., New York, demonstrated the method of attaching their stamps to hosiery and underwear.

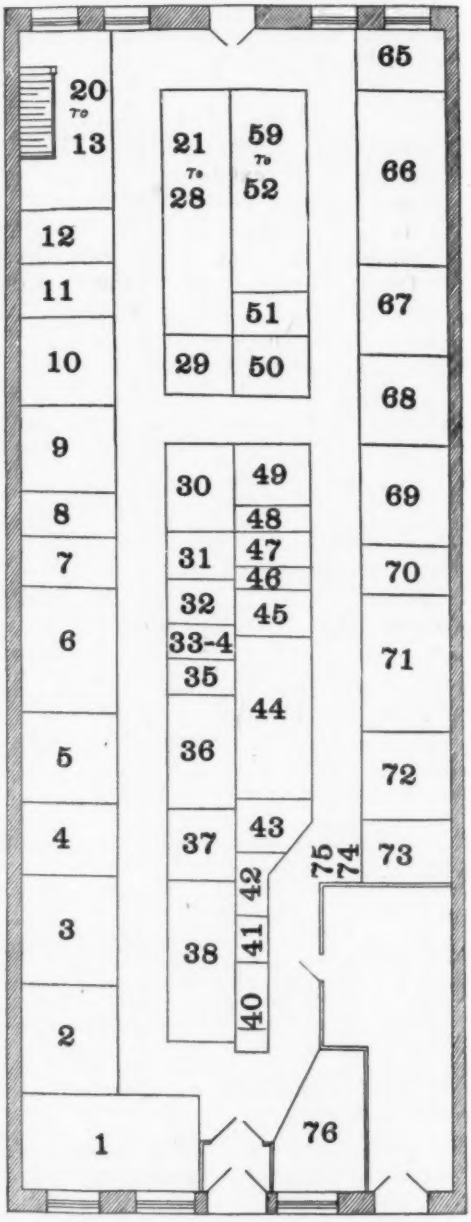
Geisenheimer & Co., New York, showed samples of their aniline salt, aniline oil, ungreenable aniline salt and "Castorine," a softener for hosiery. They also exhibited a line of hosiery dyed in fancy shades, especially tans, and directions for producing these shades with a comparatively small number of dyestuffs. They also showed two lines of black hosiery, one dyed with their sulphur blacks and the other dyed with oxidized blacks.

The E. Jenckes Mfg. Co., Pawtucket, R. I., exhibited some of their latest machinery in operation, including one of their 240-needle machines.

The exhibit of the Roessler & Hasslacher Chemical Co., New York City, was very attractive, a number of articles that had been bleached with their peroxide of sodium being shown. Goods from the coarsest to the finest texture can be bleached safely by this process. Any particulars concerning the process will be given on application to their New York office, or any of their branch houses.

One of the most attractive displays was that of the National Autoknitter Co., whose office and shops are located at 724 Cherry Street. This concern had in operation two full automatic high speed knitters, one body machine, one welter and one shaping machine, producing a very fine line of ladies' hosiery.

The exhibit of Scott & Williams of Philadelphia attracted a great deal of attention, and consisted of three full automatic knitting machines in operation. Many favorable comments were made on the fine appearance



GUIDE PLAN TO EXHIBIT OF N. E. HOSIERY MANUFACTURERS.

of the articles produced. They also exhibited at the American Cotton Manufacturers' Exhibition one of their latest improved body frames. They were running so perfectly that the attendant had nothing to do but explain to the throng of visitors. This is the first time this much talked of machine has been publicly exhibited.

The O. F. Zurn Co., who have recently removed their offices to Broad and Lehigh Avenues, Philadelphia, were represented by a very attractive exhibit consisting of the numerous machine oils handled by them as well as their wool oils of different kinds: Lardoleum, Ropoleum, Royal Belt Dressing, Turkish Softener, and Resolvent Compound for Fast Black. Visitors to the booth were presented with a souvenir pencil.

Smith, Drum & Co., 2507 Coral Street, Philadelphia, showed one of their latest improved hosiery singeing machines. They also manufacture dyeing and mercerizing machines.

The three automatic Banner machines built by the Hemphill Mfg. Co., Pawtucket, R. I., were in constant operation and attracted a great many visitors, who were very favorably impressed with the quality of the work done.

The exhibit of the Beckert Needle Co., which was one of the most attractive on the floor, was the one previously shown at the Paris Exposition. It consisted of an elaborate design composed entirely of the needles manufactured by them. A pair of link sleeve buttons was given to each visitor as a souvenir of the occasion by C. Walker Jones, who has charge of the business in this country at Germantown, Pa.

The Geo. D. Mayo Machine Co., Laconia, N. H., had prepared a resting place to welcome their visitors and invited those interested to call at their office at 6th and Arch Streets to see their machines in operation.

The Globe Dye Works Co. had an attractive display of yarn dyed on cones and in skeins.

The Boss Knitting Machine Works of Reading had in operation two of their new full automatic Boss knitters, and claim that it is the simplest knitter on the market. They also exhibited a novelty in the shape of the Robinhold top cutting machine which will cut anything with a welt.

The Merrow Machine Co., Hartford, Conn., had an attractive exhibit of their overseaming machines.

The Economy Engineering Co., Chicago, showed one of their latest tiering machines

JOSEPH S. RAMBO, THE NEW PRESIDENT OF THE NATIONAL ASSOCIATION OF HOSIERY MANUFACTURERS.

or moving elevators. This machine is guaranteed to lift 1,000 pounds and can be built to any size desired. It saves time, labor and money.

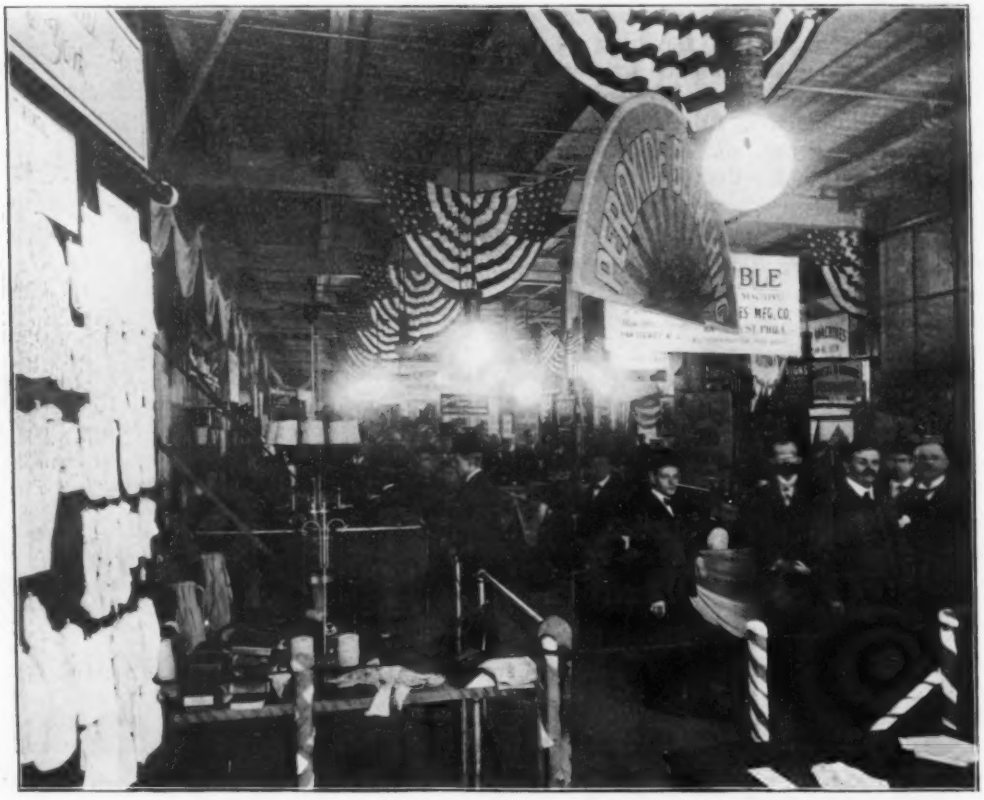
The Kaumagraph Co., 156 Fifth Avenue, New York City, demonstrated the advantages of their process of marking knit goods. The exhibit created a good deal of interest and their representative was kept busy explaining what their process would do.

J. L. Nicholson, in charge of the exhibit of the American Cost Accounting Co., of New York, was kept busy explaining to visitors the outline of their plans for decreasing cost of producton by the use of their interlocking cost system.

The Textile World Record had a well located exhibit of their various publications, and their representatives were in constant attendance, meeting old friends, and introducing them to each other.

Orrie E. Thayer, of 102 Arch Street, exhibited a small model of an ironing and pressing machine for which he claimed perfection in finish and great saving in cost.

Chas. H. Heyer, sales manager for the Never Shrink process of rendering wool and woolen goods non-shrinkable, exhibited several very interesting samples. The majority of these had been severely washed, after one-half had been treated and rendered non-shrinkable. The undershirt which has been so extensively advertised as to become almost a trade mark, attracted much attention from manufacturers, who were glad to have the opportunity of personally examining the striking evidence of the value of this process, which is in use throughout the United States, Canada and Europe.



A VIEW OF THE HOSIERY MACHINERY EXHIBITION.

The Vacuum Dyeing Machine Co., Chattanooga, Tenn., showed one of their vacuum dyeing machines.

The Salvator Transfer, 370 Washington Street, New York, showed photographs of their handsome teams. Further description of their business is given elsewhere in this issue.

Patterson's Practical Printer prints labels on boxes and also prints letters, characters or numbers in any combination desired.

This exhibit, which was a most interesting one, was in charge of A. L. Patterson, of Albemarle, N. C., and attracted a great deal of attention.

A unique exhibit was that of Wm. Steele & Sons Co., Philadelphia, who showed the model of a mill now under construction for Erben Harding & Co., spinners of woolen and worsted yarns. This mill will be 90 by 200 feet, three stories and basement, of reinforced concrete construction, smoke-proof stairway, and up-to-date in every particular.

A neat exhibit was that of the Foster Machine Co., Westfield, Mass., who had a show case filled with cones of yarn in various colors and shades.

The Industrial Mfg. Co., Camden, N. J., showed several of their latest overseamers, a machine of which they have been making a specialty since 1897, many improvements having been made since that time. They will send a trial machine on approval to any one interested.

E. F. Houghton & Co., 240 West Somerset Street, Philadelphia, exhibited a line of their oils, belt dressings, etc.

The L. J. Wing Mfg. Co., 90 West Street, New York City, displayed several of their fans in operation. They manufacture the Wing fan and turbine engine combination, the fan and engine being practically one machine.

The Standard Sewing Machine Co., Cleveland, O., had an extensive display of their machines in operation. Some of their machines are known as the "Rapid Stitcher," "F & G" manufacturing machine (rotary shuttle), "B & C" button hole machine, button sewing machine, zig-zag or overseaming machine, welters, hemmers, seamers, edging machines, etc.

The Standard Machine Co., whose booth was used as headquarters by many of their visiting customers at the exhibition, extended a cordial invitation to all those interested to call at their office at 508 Ludlow Street, and see all their latest machines in operation, of which there are 10,000 in use in all parts of the country.

The Philadelphia Drying Machinery Co. occupied a prominent place in both exhibitions and were represented by one of their latest improved Hurricane dryers and Hurricane fans, both in operation. Every visitor to their booth was presented with a handsome souvenir in the form of a watch fob from which hung a miniature silver Liberty Bell.

Robert A. Wright, who has become known among textile manufacturers as a public accountant and auditor, was prominently located in both exhibitions and a large illuminated sign explained to visitors his business and what he could do for them when they were in need of the services of a man of his profession. Mr. Wright may be addressed at his office, 826 Stephen Girard Building, Philadelphia.

One of the most interesting of the exhibits was that of J. K. Altemus, of Philadelphia, who showed a hosiery winder adapted to run from skeins, cops or cones, which was simple in construction and easy of operation. Another machine which attracted great attention was a new hosiery stamping machine, which is constructed on the principle that duplicates hand operation in detail.

The Manufacturers' Supplies Co. showed a line of their needles of various kinds, sinkers, belting and other supplies, their display being a very attractive one. Their offices at 418 Arch Street, with stenographers and telephones, were placed at the disposal of visitors to the convention.

Paxton & O'Neill received visitors in an attractive and comfortably furnished booth, where they were shown samples of goods made on their various makes of knitting machinery and invited to call at their factory, 537 North 3d Street, and see the machines in operation.

The Nicetown Dyeworks showed a line of hosiery dyed by their sulphur black process, which attracted a good deal of attention.

Harding & Fancourt, 235 North Front Street, Philadelphia, exhibited a full line of their specialties in oils and chemicals of all kinds used by textile manufacturers, includ-

ing Turkey red oils, soluble oils and olive oils. Manufacturers seemed much interested in their new Tuscan cream softener, and a number of orders were booked.

The Goulds Mfg. Co. showed a line of power pumps, including triple power pumps for boiler feeding, condenser pumps, underwriter fire pumps, etc. Their space was attractively fitted up and received much attention.

Registered Visitors at the Hosiery Exhibition.

Alabama:			G. A. Mayers,	New York	M. C. Hall.
M. W. Dunlap,	Mobile		J. Lee Nicholson,	New York	N. B. Handbury.
Jas. P. Moorland,	Mobile		W. V. Parker,	New York	H. C. Harding.
Connecticut:			Lindsay J. Piggins,	New York	A. W. Hicks.
Fred J. Broadbent,	Unionville		E. D. Smith,	New York	E. L. Hicks.
G. W. Merrow,	Hartford		E. O. Spencer,	New York	Jno. J. Higginbottom.
Delaware:			D. H. Steele,	New York	Charles F. Hetrick.
H. L. Pierce,	Wilmington		A. L. Stephen,	New York	W. A. Hetrick.
A. Ricard,	Wilmington		Orris E. Thayer,	New York	A. Z. Hoffman.
Georgia:			J. P. Voorhees,	New York	Phillip Hoffman.
N. O. Banks,	Grantville		H. S. Wheeler,	New York	Reinhard Huettig.
John H. Barnes,	Marietta		**North Carolina:**		V. Geo. E. Jenks.
H. R. Brown,	Rome		J. H. Adams,	High Point	Paul D. Johnson.
E. P. Dismukes,	Columbus		Geo. T. Andrews,	Rocky Mount	R. Johnson.
A. G. Dudley,	Athens		J. M. Browning,	Burlington	J. E. Johnston.
H. G. Kittredge,	Atlanta		D. J. Carpenter,	Newton	C. M. Jones.
Henry Spang,	Columbus		C. M. Carr,	Durham	C. J. Jones.
Illinois:			W. F. Carr,	Durham	E. S. Jones.
Geo. M. French,	Chicago		J. A. Cline,	Hickory	Jas. B. Jones.
A. S. Riehe,	Rockford		J. A. Droyes,	Albemarle	Charles Keenan.
W. Jno. Schroder,	Walhalla		P. K. Green,	Winston-Salem	F. Kegling.
P. C. Wethers,	Mt. Vernon		Ernest M. Martin,	Raleigh	Andrew P. Koch.
Edw. Ziock,	Rockford		J. E. Millis,	High Point	E. W. Knaff.
Wm. H. Ziock,	Rockford		A. L. Patterson,	Albemarle	Winthrop C. Knowles.
Indiana:			E. S. Patterson,	Albemarle	Harvey Lamb.
W. A. Hedden,	New Albany		W. H. Willard,	Winston-Salem	N. R. Landes.
Iowa:			**Ohio:**		Walter G. Lane.
J. F. Norton,	Des Moines		D. H. Bomman,	Dayton	Benj. T. Leaver.
H. T. Rollins,	Des Moines		N. L. Fay,	Elyria	Wm. Lenderfelser, Jr.
Kentucky:			**Philadelphia:**		M. Leopold.
T. L. Upton,	Paducah		E. H. Allen.		M. Lieberman.
W. B. Webb,	Paducah		E. R. Allen.		S. Magargel.
Louisiana:			W. Allen.		H. Marshead.
W. H. McLellan,	New Orleans		Thomas Allsop.		Alfred Mason.
Maryland:			J. K. Altemus.		Robert Mayer.
A. Irvin Bitner,	Hagerstown		Nesbit Atkinson.		W. P. McClure.
H. J. Carson,	Hagerstown		H. E. Ashmore.		E. S. Meriam.
S. H. Weihenmayer,	Hagerstown		D. P. Austin.		Howard Morningstar.
Massachusetts:			H. Barber.		R. G. Morningstar.
Frederick H. Bishop,	Boston		Wm. J. Bard.		J. B. Morris.
G. W. Foster,	Lowell		J. Bauer.		F. E. Munich.
Henry G. Lord,	Boston		W. N. Beatty.		Harry L. Murry.
M. A. Metcalf,	Boston		J. Bent.		John D. Nagle.
Frank L. Nagle,	Boston		D. T. Berlizheimer.		Edwin A. Newton.
Lawrence Noble,	Boston		Henry J. Bickley.		J. W. Newton.
A. E. Sproul,	Boston		C. H. Bieg.		Jas. A. O'Connell.
Earl A. Thissell,	Lowell		W. P. Brookermann, Jr.		Ellis J. O'Neill.
Michigan:			Harry Broom.		Frank J. Quinn.
F. E. Pentin,	St. Joseph		C. H. Brown.		L. W. Raab.
L. M. Pittman,	Scotland		J. D. Brown.		Peter Rahm.
New Hampshire:			Jay H. Brown.		Fred A. Rakestraw.
Frederick H. Daniell,	Franklin		Harry A. Brownhill.		W. J. Ross.
B. F. Drake,	Laconia		J. S. Bubhian.		W. M. Reggs.
M. F. Duffy,	Franklin		Louis H. Bukley.		H. M. Remington.
C. H. Sturtevant,	Franklin		A. E. Burr.		H. C. Remmers.
E. S. Tilton,	Laconia		John J. Callaghan.		H. A. Romberger.
New Jersey:			John G. Campbell.		Thos. C. Russell.
C. L. DuBois,	Camden		Geo. W. Chapin.		Morris F. Schmidt.
N. G. Gregory,	Camden		Charles Chipman.		Charles Schoeneman.
Geo. O. Nye,	Camden		Peter Chocaley.		Edw. Schultz.
David Cottrell,	Hammonton		T. F. Clinton.		C. W. Schwartz, Jr.
E. C. Stoughton,	Ruerton		J. H. Connington.		R. W. Scott.
New York:			C. B. Crosby.		J. M. Seale.
A. B. Andrews,	New York		Jno. C. Curtiss.		C. J. Seeley.
Geo. W. Bache,	New York		Samuel Dingley.		C. S. Shell.
P. H. Bates,	New York		R. C. Doelber.		Jos. H. Shims, Jr.
S. Beissinger,	New York		Louis Donger.		W. W. Sibson.
W. H. Berry, Jr.,	New York		S. D. Dorsey.		F. W. Simons.
A. M. Carr,	New York		F. E. Elwell, Jr.		A. M. Smith.
G. F. Carrell,	New York		Robt. B. Ely.		H. H. Smith.
R. A. Carter,	New York		W. H. Fancourt, Jr.		I. W. Smith.
Geo. Chadwick,	New York		L. A. Fisher.		P. J. Smith.
C. H. Clark,	New York		W. J. Fling.		R. P. Smith.
Joseph Colter,	New York		E. Frank.		I. R. Smyth.
Thos. S. Couser,	New York		E. B. Gorman.		F. A. Soonarby.
E. B. Crane,	New York		Danl. R. Greenwood.		I. Spier.
A. M. Isaacs,	New York		John T. Greenwood.		Andrew L. Steele.
Jas. Jamison,	New York		Horace T. Greenwood.		I. D. Stiles.
E. W. S. Jasper,	New York		Malcolm Gunn.		H. Swinglehurst.
E. Klein,	New York		William H. Hahn.		A. W. Taylor.

H. W. Taylor, Jr.
Frank Tert.
R. E. Thompson, Jr.
Franklin Threapleton.
P. E. Tibbetts.
Gustav Vansdow.
R. A. Vine.
A. W. Walkden.
Wm. J. Wall.
C. E. Walls.
Otto Walther.
Chas. W. Washor.
H. Welker.
Wilfred Wells.
Robt. H. Welthall.
J. E. Whiting.
C. A. Wigmore.
John C. Wilson.
L. Wolf.
Fred M. Wood.
L. V. Yingst.
John M. Zinn.

Pennsylvania:

E. S. Adams,	Norristown
J. A. Adcock,	Pottsville
C. W. Baker,	Reading
H. J. Bizony,	Mohnton
Jno. Black,	York
Harry D. Bohler,	Pottsville
Chas. A. Brossman,	Reading
Wm. T. Buck,	Weldon
F. L. Chipman,	Easton
J. D. Clemmons,	Pottstown
D. E. Colehener,	Reading
L. B. Conway, Jr.,	Danville
Geo. D. Dobbins,	South Bethlehem
Thos. A. Delaney,	Danville
J. W. Durbin,	Williamstown
E. H. Eck,	Reading
H. C. England,	Reading
Edward Flecht,	Milton
Henry B. Freed,	Souderton
M. H. Fritz,	Shillington
M. S. Gabriel,	Coopersburg
L. Howard Gohris,	Reading
John H. Goeser,	Danville
Geo. W. Gunn,	Allen
Geo. G. Gunther,	Reading
J. W. Harold,	Reading
G. W. Hank,	Reading
J. W. Heckman,	Shoemakersville
E. V. Hestine,	Reading
D. K. High,	Robesonia
A. S. Hornberger,	Mohnton
Ed. P. Jones,	Lykens
W. F. Jordan,	Bangor
L. Kauffman,	Bridgeport
E. G. Keim,	Reading
D. F. Kelchner,	Fleetwood
F. G. Kniley,	Lykens
J. G. Kuersten,	Reading
H. D. Leinbach,	Wyomissing
G. H. Leninger,	Mohnton
W. G. Leninger,	Mohnton
O. W. Lerch,	Bath
L. K. Lesley,	Browntown
Jas. K. Loose,	Reading
Chas. S. Madenia,	Fleetwood
G. W. Malick,	Hernden
Frank T. McElroy,	Steelton
J. B. McElroy,	Steelton
H. A. Miller,	Topton
Pierce Mohn,	Adamstown
Isaac Mossop,	Wiconisco
Jos. S. Rambo,	Norristown
W. S. Rand,	Norristown
E. D. Rank,	Williamstown
John Reber,	Pottsville
H. K. Regar,	Norristown
J. G. Rick,	Reading
F. W. Robinson,	Reading
Samuel Rowland,	Schuylkill Haven
C. M. Schwaub,	Reading
Thos. Searles,	Pottstown
J. L. Seidel,	Temple
Jas. F. Seidel,	Temple
T. L. Seidel,	Reading
H. W. Sheeler,	Robesonia
H. H. Shenck,	Manheim
C. S. Sheppard,	Pittston
H. V. Sheppard,	Pittston
W. G. Stany,	Harrisburg
H. B. Tyson,	Norristown
A. V. Walter,	Brownstown
F. S. Weaver,	Ephrata
Joseph West,	Nanticoke
Robert West,	Ashley
Thomas West,	Plymouth
O. B. Wetherhold,	Reading
H. Y. Yocum,	Grill
R. A. Young,	Coopersburg

South Carolina:

J. A. Blackwelder,	Newberry
D. Little,	Spartansburg
J. M. Norris,	Westminster

Tennessee.

Garnet Andrews,	Chattanooga
W. B. Devis,	Chattanooga
H. Bacon,	Loudon
D. M. Hay,	Chattanooga
John M. Jones, Jr.,	Sweetwater
J. McFreete,	Knoxville
J. H. McPhail,	Nashville
Paul F. Vogel,	Clinton

Virginia:

H. A. V. Parker,	Portsmouth

Wisconsin:

W. S. Brewer,	Two Rivers

The Tariff on Etamines.

BY EDWIN A. HARTSHORN,
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TAMPERING WITH THE LAW.

He who ruthlessly tampers with that law, whether to suit his own fancy, or to increase his own fortune, is a greater menace to a nation than the brigand or the nihilist.

The tariff laws of both Germany and the United States are designed to be protective in character. Each nation imposes upon open-woven, transparent, or semi-transparent, cotton tissues, a duty amounting to nearly double that placed upon close-woven fabrics.

The German tariff imposes a duty of 80 marks per 100 kilograms upon "close-woven (cotton) tissues," 120 marks per 100 kilograms upon "open (cotton) tissues," 200 marks per 100 kilograms upon all "transparent (cotton) tissues," and 230 marks per 100 kilograms upon (cotton) "tissues for curtains."

The American tariff imposes a duty of from 25 to 40 per cent. ad valorem on plain, close-woven cotton cloth of various descriptions. It also provides a duty of 60 per cent. ad valorem upon cotton "etamines," "vitrages," "veils and veilings."

THE GERMANS ENFORCE THEIR TARIFF LAW.

Germany is sufficiently patriotic to execute her tariff as enacted by the people; and keen enough to send to the United States her "etamines," "vitrages" and "veilings" at rates specified for close-woven tissues, equivalent to about half the rates specified in our tariff as it was enacted by the people.

This method of administration gives Germany not only an absolute monopoly of open cotton tissues in her own markets, but practically a monopoly of the American markets as well.

The treasury officials and judges in Germany do not lie awake nights rewriting the tariff downward on the plea that their "legislators did not intend to impose prohibitive duties upon foreign competing merchandise." On the contrary, they execute the tariff law as it was enacted by the people, and lie awake nights to modify the tariffs of other nations, so as to secure for German goods a monopoly in other countries, to the end that the Fatherland may prosper while other nations decay.

One of the most popular German songs constantly reiterates this sentiment: "Germany, Germany, over everything in all the world."

While the patriotic German sings the praises of German manufacturers, though they constantly publish decidedly higher prices for domestic sales than for export, many alleged Americans are vehement in their condemnation of American manufacturers because they sometimes sell their surplus products abroad at lower prices than at home.

WHAT'S IN A NAME?

Is it that the German people are more fortunate than the Americans in describing cotton cloth, or are their customs officials more patriotic in the administration of their law? The terms "open tissues" and "close-woven" tissues are certainly no more descriptive of cotton woven fabrics than are "cotton cloth," cotton "etamines" and cotton "vitrages." The latter words have been in commercial and descriptive use in connection with

open-woven fabrics for at least a generation. In fact, nearly all French commercial terms are descriptive of the merchandise which they denote. The term "etamines" can mean nothing but sieve cloths; "vitrages," in a cloth schedule, can mean only transparent or semi-transparent fabrics so woven as to admit light and to be thus fitted for use about glass windows which they resemble. As a matter of fact, no single words are more specific, commercially or descriptively, than those employed in our own tariff to describe various cotton fabrics. Nevertheless, those who have been engaged in rewriting our tariff downward—without legislation, or the guidance of the testimony of practical business men—are constant and vehement in criticising its construction.

The invitation to address this convention was accepted with the intention of reciting, without note or comment, merely the testimony and decisions in the etamine and vitrages customs cases. Such a procedure, however, on account of the great volume of testimony and the unusual length of the decisions, is plainly impossible in the time allotted for this address. Only a brief synopsis has therefore been attempted.

THE TARIFF LOWERED.

Nevertheless, upon this record and testimony the board of general appraisers (in G. A. 5790) decided that open-woven cotton "etamines" and "vitrages," and articles made therefrom for curtain purposes, are close-woven cotton cloth, dutiable at little more than half the rate specified in the tariff as enacted.

The same decision also found that all open-woven flax etamines and vitrages, for whatsoever use intended, are dutiable at the lower rates specified for close-woven flax fabrics.

For the alleged reason that this decision was "vague and unsatisfactory in that it gave no safeguard for future classification," the Treasury Department directed the collector of customs at New York to take an appeal therefrom. This appeal, though taken, was finally withdrawn by direction of the department after several months of investigation.

Thus the tariff was rewritten, and, as stated in a later decision (G. A. 6147) "reliquidation of a vast amount of merchandise" followed. In plain language, this means that there was taken from the United States Treasury a vast amount of money, one-half of which fell into the hands of those instrumental in obtaining this decision.

The decision itself explains why cotton etamines and veilings designed for dress goods were found to be dutiable, in the following words:

"As to these goods, the return of the appraiser is that they are etamines, and the importer introduced no competent testimony showing any other trade designation as to the particular merchandise, and there is therefore no testimony in the record rebutting the return of the Appraiser, which under the circumstances is controlling."

The importers, however, were soon thereafter afforded an opportunity to produce abundant evidence of the desired character, without the slightest fear of contradiction by government witnesses.

A STUPID JUDICIAL BLUNDER.

In order to demonstrate beyond the shadow of a doubt the contention that the appraiser and the collector of customs had made a stupid judicial blunder in their classification of open-woven cotton fabrics, a new case was decided upon.

Several hearings on various dates were set for testimony as to the commercial meaning of "etamine," "vitrage," "veiling" and other terms applied to open-woven cotton fabrics. Of these hearings no notice was given, and therefore no opportunity whatever was afforded the appraiser of producing witnesses to testify for the government.

At one of these hearings—as the record shows—and the decision of the general appraiser itself confirms the record—"counsel for certain importers moved that the record and testimony in G. A. 5790 (T. D. 25580) be made a part of this record." Said motion was granted, and the board of its own motion consolidates the records in the cases above enumerated with that last given.

It should also be stated that at the final hearing the counsel for the government recalled one of the four witnesses for the importers in the former etamine case. The further testimony of this witness was in part exceedingly erroneous, and therefore quite unfavorable to the government. All the witnesses in the new case, with this single exception, solemnly swore that they had bought or sold open-woven cotton cloth for many years, but that in their entire business experience they had never heard the goods called etamine.

Upon this record and testimony the board of general appraisers found, in G. A. 6147—T. D. 26692 that all open-woven cotton fabrics—with the single exception of embroidery foundations, white or ecru—are dutiable as close-woven fabrics; also that all articles made from embroidery etamine, white or ecru—which in the piece is dutiable at 60 per cent.—are close-woven cotton cloth, dutiable at only 25 per cent.

With the acquiescence of the department in this decision, there followed as a matter of course further reliquidation of vast quantities of merchandise, resulting in the withdrawal from the United States Treasury of a vast amount of money to fill the coffers of those favored by the decision.

By this decision, the tariff was again rewritten, so that, as compared with the merchandise originally subjected to a duty of 60 per cent. what was left so dutiable (embroidery foundations white or ecru) was very little indeed.

Nevertheless, the importers and their attorneys were not satisfied even yet; for they immediately carried the case to the United States circuit court, where they produced additional never-heard of etamine witnesses, and then rested their case.

If the case had been submitted to the court upon this record and testimony, embroidery foundations would undoubtedly have been found dutiable as a close-woven "25 per cent. proposition," and more money would thus have been taken out of the treasury.